THE EFFECTS OF SEQUENTIAL PUNISHMENTS AND PERSONALITY UPON THE DEVELOPMENT OF REPRESSION-SUPPRESSION AND ITS GENERALIZATION

By

NORMAN DALE SMITH

Bachelor of Arts

Phillips University

Enid, Oklahoma

1958

Submitted to the Faculty of the Graduate School of
the Oklahoma State University
in partial fulfillment of the requirements
for the degree of
DOCTOR OF PHILOSOPHY
August, 1964

THE EFFECTS OF SEQUENTIAL PUNISHMENTS AND PERSONALITY UPON THE DEVELOPMENT OF REPRESSION-SUPPRESSION AND ITS GENERALIZATION

Thesis Approved:

Leonard Worell
Thesis Adviser

Robert W. Scofield

Harry K. Brost

William H. Barbe

J. Leroy Hollis

Dean of the Graduate School

ACKNOWLEDGEMENT

The writer wishes to express his appreciation to a number of people who have helped make this study possible. I am indebted to Dr. Leonard Worell, who served as chairman of the doctoral committee, and to Dr. Robert Scofield, Dr. Harry Brobst, Dr. William Rambo, and Dr. J. Leroy Folks for their interest and assistance in various phases of this study.

In addition, special recognition is due Dr. J. Leroy Folks and Dr. Robert Morrison for the time they spent in aiding me in my preparation of the data for computer analyses.

Finally to my wife, Tillie, "vielen Dank."

The partial financial support of U.S.P.H.S. Grant no. M4881 (Dr. Leonard Worell - principal investigator) aided in the completion of this investigation.

TABLE OF CONTENTS

TABLE OF CONTENTS (Continued)

LIST OF TABLES

LIST OF FIGURES

CHAPTER I

THE PROBLEM

Background of the Problem

The experimental work in the '30's and '40's on repression focused its attention on the effects on memory of threat to "self-esteem" arising from early childhood traumas or experimentally produced trauma. This approach proved partially unsuccessful because in each study there were large numbers of subjects that did not conform to the hypothesis that threat should reduce the number of recalled events. With the advent of the '50's, the emphasis shifted to the perception of stimuli made threatening within the temporal confines of the experimental situation. Again, the findings showed a large number of subjects responding to threat more readily than expected while others showed a reduced response. This implied that threat both inhibited and facilitated responding. Initially, a continuum of vigilance-defense was postulated (Bruner and Postman, 1947). This explanation was filled with methodological errors and inadequate control of antecedent variables. In another attempt to account for these findings a continuum of intensity of punishment was postulated (Murphy and Solley, 1957; Osgood, 1957). An extensive review by Church (1963) indicated that punishment may suppress responding completely, partially, or temporarily, or at times facilitate

responding. Since the intensity continuum does not support the diversity of findings, it may be useful to examine a new approach to the relation of punishment and response change.

Worell (in press), in examining the effects of continuing sequences of punishments of equal intensity, found that responses within the sequence were differentially affected. He suggested that a continuum of availability of punished responses would best characterize repression-suppression.

Since research in this area is in its initial stages, a number of questions might be posed. The one with which this research will be most directly concerned is the generalization effects of induced repression-suppression arising from sequential punishment.

Hypotheses Pertinent to the Problem

The proposed area of concentration described by this research, that is, generalization effects, gives rise to the following specific questions.

1) Since clinical views have stressed the importance of sex and hostility, an examination of the effects of continuing sequences of punishments of equal intensity on responses related to these areas will be made.

2) Will generalization to non-punished stimuli take place differentially according to sequentially punished behavior?

3) Do individuals who perceive reinforcements as contingent on their own behavior respond differentially to those who perceive reinforcements as occurring by chance?

4) Will subjectively defined intensity of punishment produce

differential effects on the availability of behavior, hence repression-suppression?

5) Are individuals able to identify or show awareness of behavior that has been sequentially punished?

6) Will the number of punishments experienced sequentially produce differential responding?

7) Do latency measures indicate differential responding to sequentially punished responses?

CHAPTER II

REVIEW OF THE LITERATURE

The major purpose of this review is to present those studies in which an experimental approach has been taken to the concepts of repression and suppression. The review may be divided into three general areas. The first will deal with the definitional problems of the concepts of repression and suppression; the second will deal with various methodological approaches most clearly allied with what people conceded repression to be; the third area will deal with differential effects of punishment.

Definitional Problems

Repression was the pivotal concept around which Freud built his theory of personality. Of lesser importance to Freud, but enlarged upon by later psychoanalysts, was the concept of suppression. Much current confusion surrounds the concepts of repression and suppression. This is attributable to the fact that there is not one definition, but several, of these terms.

The first appearance of the term "repressed" occurred in early communications between Breuer and Freud.

> In the first group we reckon those cases in which the patient has not reacted to psychical trauma because its nature excluded the possibility of any such reaction as in the case of the apparently irreparable loss of a loved person or when social conditions made reaction

> impossible, or when the trauma concerned something which the patient wished to forget, and therefore deliberately repressed and excluded from his conscious thoughts (Breuer and Freud, 1893, p. 32).

This statement on repression was followed by another one year later.

> These patients whom I analyzed had enjoyed good mental health up to the time at which an intolerable idea presented itself within the content of their ideation life; that is to say, until their ego was confronted by an experience, an idea, a feeling, arousing an affect so painful that the person resolved to forget it, since he had no confidence in his power to resolve the incompatibility between the unbearable idea and his ego by the processes of thought (Freud, 1894, pp. 61-62).

According to Madison (1961), "There is general agreement that in this initial use 'repression' meant unconsciously motivated forgetting" (p. 16). All, however, do not seem to agree with this view. Brenner (1957) felt that repression was first considered by Freud as a conscious, not unconscious process.

However, in 1896 Freud made clear that he viewed repression as unconsciously motivated forgetting when it was applied specifically to hysterical amnesia. He further elaborated the relation of the unconscious to repression in his paper, "The Unconscious" (1915):

> Psycho-analysis has taught us that the essence of the process of repression lies, not in abrogating or annihilating the ideational presentation of an instinct, but in withholding it from becoming conscious. We then say of the idea that it is in a state of 'unconsciousness', of being not apprehended by the conscious mind, and we can produce convincing proofs to show that unconsciously it can also produce effects, even of a kind that finally penetrate to consciousness, but at the very outset let us state that the repressed does not comprise the whole unconscious. The unconscious has the greater compass, the repressed is a part of the unconscious (Freud, 1915b, p. 98).

At about the same time Freud (1915a) still further amplified and

extended his views on repression by applying the term to more than hysterical amnesia and proposed that two mutually dependent but different processes of repression could be distinguished, namely, primal repression and repression proper. This distinction was apparently necessitated by Freud's recognition that it was not the nature of the adult traumatic experience as such that produced repression since many people have similar traumatic experiences but do not develop partial repression. Rather, a disposition to repression already had to exist. Hence, to account for this, Freud suggested primal repression which occurred in early childhood and "which consists in a denial of entry into consciousness to mental presentation of the instinct. A second phase of repression, repression proper, concerns mental derivatives of the repressed instinct presentation, or such trains of thought as, originating elsewhere, have come into associative connection with it" (Vol. 4, p. 86). Hence, repression proper refers to the expulsion from the consciousness of present thoughts or other responses related to earlier childhood traumas which had been removed from consciousness by the process of primal repression.

Subsequent to Freud, a variety of definitions of repression were suggested through experimental approaches; some of which presumably dealt more with primal repression whereas others dealt with repression proper.

Very early approaches to repression interpreted this in terms of a more specific definition of the effect of hedonic tone on memory. Of 26 studies reviewed by Meltzer (1930), 16 favored the recall of pleasant affect, while none paradoxically favored recall of unpleasant

material. A later review by Gilbert (1937) of 22 additional studies found that 13 supported the hedonic hypothesis while the remaining ones did not. In both reviews it was clear that the research contained methodological errors as well as the assumption that the mechanism underlying recall of pleasant memories was repression. In relation to this latter point, there are many other potential intervening variables besides repression which may account for the recall of pleasant memories, as for example, selective learning of pleasant and unpleasant experiences.

At about the same time that this former approach emphasizing a relation between hedonic tone and recall was being examined, a different definition of repression was suggested by the work of Zeigarnick (1927). Operating within the framework of a Lewinian tension theory, she found that part of her subjects recalled more completed than uncompleted tasks. The use of this task interruption technique especially when combined with "ego-involving" instructions was thought by many to parallel Freud's process of repression proper. In contrast, many psychologists have objected to the use of this particular experimental definitional approach to repression in view of the findings that often as many uncompleted as completed tasks were recalled.

After the introduction of these two experimental definitions of repression research was relatively scant for many years. Then around 1950 a new approach was proposed. A shift was made from the study of threat on memory to the effects of trauma on perception. Although labeled "perceptual defense" rather than repression, one of the major problems appeared here in relation to the concept of

suppression. Freud had not differentiated between repression and suppression but used them interchangeably. Other analysts, however, did make a distinction. Alexander (1932) probably gave the clearest definition of suppression as "a conscious and voluntary selective process," whereas repression was an unconscious and automatic process (p. 113). The emphasis in this approach was upon conscious verbal activity as contrasted with the more behavioristically oriented approach of perceptual responding. For the most part, perceptual responses were quantitatively measured in relation to the occurrence or non-occurrence of stimuli.

In part the orientation of the present approach is derived from this interest in suppression. In an attempt to handle the puzzling phenomenon of marked individual differences in response to similar traumatic or punishing experiences, the phenomenon of both repression and suppression have been reconceptualized such that repression-suppression is viewed as lying on a single continuum (Worell, in press). This continuum is one of availability of punished responses. From this view one could discard either repression or suppression and deal simply with either the degree of repression or suppression. The present approach further stresses the importance of sequential punishment in producing different degrees of repression-suppression.

In the foregoing, it was noted that the definition of repression has not been stable, that it has varied with techniques of investigation, and that a major change in conceptualization has been in the direction of more behaviorally oriented definitions.

In subsequent sections a number of the preceding areas will be covered in more detail, specifically, in one large section the work

with interrupted tasks and perceptual defense will be handled. In a final section work relevant to punishment and factors affecting responsiveness to punishment, such as generalization and personality, will be reviewed.

Methodological Approaches to Repression

Incompleted Tasks: In 1927 Zeigarnick presented a series of twenty tasks, such as punching holes in paper, naming cities beginning with the letter "K", winding thread on a spool, circling vowels, etc. Half of the tasks were allowed to be completed; half were not. Zeigarnick was not examining "repression" but rather the Lewinian notion of the effects of task-produced tension within the personality. On this basis, she predicted that the incompleted tasks would produce unreleased tension and hence they should be recalled more frequently. However, contrary to her predictions, she found that subjects who interpreted the situations as threatening to their self-esteem recalled a greater number of completed tasks.

Rosenzweig and Mason (1934), interpreting repression as a tendency on the part of consciousness to forget painful or threatening events or thoughts, saw in Zeigarnick's findings of greater recall for completed tasks a possible indication of repression. They used 40 crippled children, 25 males and 15 females in their first study. The children were told by the teacher that they would be given a test to see how well they could do on puzzles with a prize awarded for the best performance. The task was a number of jig-saw puzzles varied, so it was possible to assign them on the basis of the age and ability of each child. Varying amounts of time were allowed

for the puzzles depending on their difficulty. Before each puzzle was given, the subjects were given a card on which a miniature reproduction of one of the puzzles was depicted in its completed form. After this, they received the puzzle corresponding to the miniature. Subjects were allowed to succeed in half the total number of puzzles attempted and were failed in the remaining half. The findings showed that 16 subjects recalled significantly more completed than incompleted tasks in the stress condition and that these same subjects were also rated high on pride by their teachers. The authors interpreted this latter finding to mean that the situation was sufficiently painful for this group to induce repression of the failure tasks.

In another, but better controlled study, Rosenzweig (1943) further examined the effects of situational factors on the recall of completed tasks. In this study he used a different type of motivation. One college group of males was asked to help the experimenter classify some jig-saw puzzles for later use, whereas another group was told that the puzzles were part of an intelligence test. The interrupted tasks method was used with the result that the first group recalled significantly more interrupted tasks, and the second group recalled significantly more completed tasks.

In the foregoing researches, it was always found that many subjects did not conform to the predictions in that they recalled more incompleted than completed tasks. Alper (1946) felt that these individual differences could be a result of some personality factor. Two groups each composed of 10 draft age males were given a series of scrambled sentences, half of which were solvable and half were

not. Two sets of instructions were used, one neutral and the other assumed to be threatening. The findings showed no significant recall differences under either set of instructions. It should be noted that subjects were compared within and not between the instruction groups. Following this, an intensive clinical study of the subjects using a need theory framework suggested by Murray was conducted. Two patterns of recall emerged: 1) strong ego pattern, consisting of a greater recall of interrupted tasks under neutral conditions and of completed tasks under ego threat, 2) weak ego pattern, consisting of greater recall of completed tasks under neutral conditions and of interrupted tasks under ego orientation.

Encouraged by these findings, Alper (1957) then attempted to predict the direction of selective recall based on ego strength in a new study. She used two groups of nine subjects, each selected in advance on the basis of ego strength by means of a "Psychological Insight Test" and interviews. All subjects were given both neutral and ego-oriented instructions. Two comparable sets of scrambled phrases, 12 in each set, were to be arranged into sentences. Six were solvable in 2 minutes, 3 in two minutes, and 3 were unsolvable. The findings revealed that there was no significant difference between the strong and weak ego strength subjects under neutral or ego-oriented instructions for the recall of either interrupted or completed tasks. However, cutting across instructions, differences in recall measured by the total incompleted minus total completed tasks for the two groups was significant with the greater recall of completed tasks than interrupted occurring for the strong ego group. Alper interpreted these findings as support for the view that personality

factors are more important than situational ones in determining differences in behavior in recall tasks.

Although a strong position has been made for personality factors, a number of questions were raised by Glixman (1948) regarding the findings. He criticized Alper's research in the '40's primarily because she lacked clarity in the statement of what she was testing. Glixman felt that her primary objective was a test of changes in recall as a function of stress and that a secondary purpose was to test the hypothesis that recall changes were a function of personality. If subjects were selected randomly with respect to personality variables, there should be no systematic changes in recall as a function of stress. When her data was examined by Glixman, he found that Alper had made separate comparisons for the subjects' recall under stress and for the subjects' recall under non-stress. These comparisons were not consistent with her hypothesis that change in recall of completed tasks was a function of stress. Furthermore, when a comparison was made between recall of completed activities in the stress situation with the recall of completed activities in the non-stress situation, there was a significant decrease.

Glixman further took issue with the research of Rosenzweig and Mason (1934) and Rosenzweig (1943) over the ratio they used. The problem was that the ratios confounded the effects of recall with the conditions of stress and non-stress. Specifically, using their ratios, Glixman argued that there are three ways in which a lowered recall difference score may come about. This means that calculations arising from these ratios are spurious and that conclusions based on the ratios would be questionable.

In an attempt to improve upon the research, Glixman (1949) used separate ratios to compute recall to avoid confounding conditions of recall and stress. In his study three levels of stress were used, namely, neutral, moderate, and strong emphasis on successful performance. Ninety subjects distributed equally among the three conditions were given 20 paper-and-pencil tasks. The findings indicated that as stress increased, recall of completed tasks showed a non-significant decrease whereas recall of incompleted tasks showed a significant decrease.

In sum, the foregoing investigations of the effects of stress on incompleted versus completed task recall have produced these results. For recall of incompleted activities as stress increased, Rosenzweig and Alper found non-significant decreases, whereas Glixman found a significant decrease. For recall of completed activities as stress increased, Rosenzweig found a non-significant increase; Alper found a significant decrease; and Glixman found a non-significant decrease. Commenting on the divergencies, Sears (1950) pointed out that the interrupted task technique contained the Zeigarnick effect itself which was already known to influence recall apart from stress. Sears summarized by saying, "Neither the logical implications nor the empirical effect of interruption are sufficiently known to permit any effective control of this extraneous but intrusive factor." Moreover, when "a research operation requires as much discussion of its 'psychological meaning' as interruption does, it is time to find a new operation" (p. 113).

A different approach to the interrupted task problem which is not affected by Sears' criticism was taken by Caron and Wallach (1957).

They designed a study such that predictions arising from the repression (Rosenzweig) and task-tension (Lewin) positions could be compared with predictions arising from a selective learning view. The major contention of the study was that selective learning will better account for the changes attributed to either repression or task-tension. The selective learning view holds simply that if items are not recalled, there must have been a deficiency in original registration. Hence, after tasks are performed under stress, repression theory holds that removal of the threat should restore the forgotten tasks to consciousness, whereas selective learning would predict no change in recall. In contrast, under the task-tension position, following the removal of threat, a decrease in recall of incompleted tasks should occur while no change would be predicted with the selective learning view.

In addition to the above considerations, the question was posed that if selective learning was found to account for the data does this rule out the operation of memory entirely? The authors suggest that threat may effect the entire test situation and not specific items in it. To examine this possibility they obtained thresholds for words related in a general way to the threat situation. Repression should increase the threshold and trace stabilization should decrease it. Furthermore, removal of the threat should normalize the perceptual thresholds.

One hundred seventeen subjects were distributed into success and failure recall groups on the basis of preliminary factor analytic findings. Stress was induced by failure on scrambled sentences and instructions emphasizing that the test was a valid intelligence test.

Each of the two groups, success and failure recallers, were divided into three stress groups: neutral, relief, and stress. Under the relief condition, the subjects were told the experiment was a hoax; this occurred after a failure performance, whereas the stress group was not informed until the conclusion of the experiment. The findings were these: 1) both of the success and failure recall tendencies were due to selective learning rather than a selective remembering mechanism, 2) a repression mechanism was demonstrated for success recallers with regard to the stress situation as a whole, 3) a comparable process of enhanced retention of the total stress situation was not demonstrated for failure recallers, rather, the effect here was due to enhanced registrations.

These findings further add to the criticisms of the usefulness of the task interruption technique in that recall for the entire stress situation was reduced and not recall for individual tasks. Hence, any ratio predicated on comparisons of single tasks recalled or not recalled could not be meaningful. Furthermore, in regard to the findings that success recallers showed "repression" for the situation as a whole under stress conditions, it would be possible to interpret this as support for Alper's insistence on a personality factor. However, the fact remains that under stress the failure recallers did not show "repression," whereas the success recallers did; and this individual difference is still a factor for which an adequate explanation has yet to be given.

Perceptual Defense: With the advent of the '50's there was a shift from an examination of the effects of various motivational factors on memory to that of perception. This shift may be generally

classed under the rubric of "perceptual defense" which has been defined as a "learned functional response consisting of a delay in recognition of an inimical stimulus until such time as an accurate identification is inescapable" (Postman, 1953, p. 300). This delay is revealed by such response measures as perceptual recognition, speed of responding, learning, and recall.

The initial work was done by Bruner and Postman (1947). The association times of 19 subjects were measured to 99 words. A number of the words were neutral in meaning such as clock, book, chair, carry, etc. Six words with the longest, six with the median, and six with the shortest reaction times were then selected for each subject. Two weeks later the subjects returned and were presented with the 18 words tachistoscopically to determine their recognition thresholds. The results indicated a curvilinear relationship with two general patterns; one, time of recognition may be essentially a monotonic increasing function of association reaction time with a slope which tends to be negatively accelerated; two, that recognition time first increases as a function of associative reaction time, passes through a maximum, and then decreases. This was interpreted by the authors to mean that with increase in emotionality of the stimulus, recognition is avoided as long as possible as an anxiety-reducing technique; and this constituted perceptual defense. As in the task interruption techniques, individual differences were also apparent. Part of the subjects indicated a "critical degree of emotionality" beyond which perceptual defense did not operate. At this point sensitization to the "tension-producing" stimulus produced what the authors called perceptual "vigilance." In addition the

stress dimension, defined by reaction time, provided the same results that were found in the task-interruption research, i.e., under high stress great variability in behavior was observed.

Objections were raised to the terms perceptual defense and perceptual vigilance by Solomon and Howes (1951) on the grounds that perceptual involves both optical operations and verbal-instructional ones. Thus it is essential to specify the response properties that define perceptual concepts as well as situational properties. In the Bruner and Postman study just described, the situational properties were threatening stimuli, and the response properties were reaction time and defense threshold. However, the changes in the latter are attributed to an internal event. Solomon and Howes objected by saying that the linguistic properties of the response, namely, word frequency should be examined first. To do this, Solomon and Howes replicated a study by Postman, Bruner, and McGinnies (1948) in which the values of the subjects were obtained from the Allport-Vernon Scale of Values. Thresholds for words highly related to the subject's values were slightly lower than for words of low value. The authors called this selective sensitization. However, when the words in the study were controlled for frequency of usage by a Thorndike-Lorge count, the findings of Solomon and Howes indicated that no significant differences existed. Further confirmation of these findings was obtained by Postman and Schneider (1951).

Solomon and Postman (1952) also examined the relationship between the frequency of prior usage and threshold recognition. Pronounceable nonsense words were used as stimuli. Frequency of usage was controlled by requiring subjects to read and pronounce different nonsense words which had frequencies ranging from 1 to 25.

Later, subjects' tachistoscopic recognition thresholds for these words, as well as for control words which had zero frequency of prior usage, were determined. Recognition thresholds were found to vary with frequency of prior usage.

In spite of this experimental evidence which indicated that a great amount of variance in threshold level could be attributed to word frequency, some experimenters were still observing threshold differences even when frequency or familiarity of words was controlled (Cowen and Beier, 1954; Lazarus, 1954; Wiener, 1955; DeLucia and Stagner, 1954). For the most part these findings indicated an interaction between frequency and the emotionality of words.

To attempt to account for these persistent findings of perceptual recognition threshold differences to threat versus non-threat, the notion of response suppression, defined as deliberate withholding of responses to emotional words by subjects because of the embarrassment involved in reporting the word, was suggested (Howes and Solomon, 1950; Postman, Bronson, and Gropper, 1953; Bitterman and Kniffen, 1953). However, in a series of studies where the subjects were alerted to the fact that taboo words were used, the threshold of taboo words was actually lowered when compared to neutral words (Lacy, Lewinger, and Adamson, 1953; Freeman, 1954, 1955). These studies showed that when the subject is set for the taboo words, suppression does not affect him. Adding further to the doubtful effects of suppression, McGinnies and Sherman (1952) conducted a study using eight five-letter words matched for frequency and neutrality. Four of these words were presented after full exposure of a taboo word and four after full exposure of a neutral word. The subject's recognition threshold was

tested for the neutral words and those that had been followed by taboo words had higher thresholds than those followed by neutral words. The authors pointed out the fact that there was no reason to withhold saying a neutral word. Hence, the foregoing suggests that when factors contributing to response suppression are eliminated or controlled, thresholds for recognition still differ for "neutral" and "non-neutral" stimuli.

Excluding the research cited previously which has attempted to clarify problems of method such as word frequency, set, and response suppression, the remaining studies have resorted to some underlying mechanism such as repression for an explanation of the findings. Dulany (1957) proposed a behavior theory analysis of the process. According to the analysis, whatever perceptual reaction is initially dominant, either defense or vigilance, it should be possible to change the reaction by selective reinforcement. Thirty-two subjects were divided into two groups. After securing a baseline level of recognition for four geometric figures, one group was punished when they did not select the critical figure out of the four; the second was punished when they did select the critical figure. In neither case was the critical figure revealed to the subjects. Finally 64 trials were run in which no punishment was delivered; the subject was asked to identify which figure was most recognizable. The findings showed significant shifting toward the critical stimulus for the first group and away from it for the second group. In both cases, learning proceeded in the absence of "awareness" on the part of the subjects that one stimulus had been selected for shocking. As the author pointed out, "the shift in relative perceptibility of these figures

could be credited either to sensitization to the non-punished stimuli or desensitization to the punished stimuli, or both" (Dulany, 1957, p. 337).

The preceding review of perceptual defense studies indicates that a series of conflicting findings have often resulted. The definition proposed by Postman at the outset of this discussion appears to be inadequate. This is evidenced by the fact that in the face of an inimical stimulus, perceptual thresholds have been found to be both raised and lowered by such factors as word frequency, set, and response suppression. However, when these issues of method have been controlled, there remains the persistent finding that responding to stimuli variously designated as "threatening" evoke variable changes in threshold behavior. The important point here is that these changes in perceptual behavior are not uniform; but rather some people increase, whereas others decrease in perceptual thresholds. The interest in the present research is to attempt, in part, to account for this varying responsiveness to punishment.

Differential Effects of Punishment and Repression-Suppression

In covering the research using interrupted tasks and perceptual defense, this review has been interested in areas which others have conceptualized as related to repression.

If a look is taken at psychoanalytic concepts of repression production, a fundamental requirement is found, namely, the existence of a traumatic event. Therefore, it is appropriate to consider research on punishment as it is related to repression and suppression in view

of the fact that punishment affects the availability of behaviors of the individual.

This section will be devoted to an examination of the several facets of punishment that are directly relevant to the variables under consideration in this research. The major topics for discussion are the following: 1) intensity of punishment and repression-suppression, 2) sequential punishment and repression-suppression, 3) generalized effects of punishment in repression-suppression, and 4) the role of personality in the effects of punishment in repression-suppression.

Intensity of Punishment and Repression-Suppression: Freud, throughout his writings, spoke of the relation of intensity of trauma to the production of repression and suppression. Several recent investigators have suggested that a continuum of punishment intensity would adequately describe the divergent findings in the area of perceptual research (Murphy and Solley, 1957; Osgood, 1957). However, it has been noted in the previous review that with supposedly the same degree of punishment, subjects behaved quite differently. This is further reinforced in a study on recall and relearning by Belmont and Birch (1951) who noted a decrement in recall and relearning of shock associated material in comparison to neutral material. Although they attributed their findings to "repression," this was only true of 16 of their 55 subjects. Rather, their most frequent observation was of gross variation of performance under shock conditions. Hence, intensity alone is not adequate to account for the findings. Clearly some other type of approach appears to be required.

Along the same lines, in a recent comprehensive review of more than 90 studies, Church (1963) concluded that "experiments on the

effect of punishment on behavior have found conditions under which punishment reliably produces total suppression and even facilitation of the punished response" (p. 396). Therefore, since equivalent or identical punishment produces such variability, i.e., response decrement and augmentation, the critical issue would then appear to be a determination of the factors that evoke this differential responsiveness. However, in noting Church's view it can be seen that both differential or equal intensities can produce total, partial, or temporary suppression, or facilitation. However, no operational distinctions were made between the various types of suppression or facilitation. Parallels exist between Church's terms and repression and suppression, but they are in no way made clear.

Sequential Punishment and Repression-Suppression: It is possible to view any research that uses repeated punishment for the same response as a type of sequential punishment. However, for the most part, the design of previous researches has not been aimed at studying the effects on behavior of sequences of unavoidable punishment but rather on the effects of punishment as such.

Dollard and Miller (1950) made numerous references to clinical descriptions which pointed to behaviors which were constantly being punished, but they apparently failed to see the importance of it. Rather, in defining repression they adhered to an unconscious-conscious continuum in which repression is characterized as similar to suppression except that it is more strongly motivated and automatic. Repression and suppression are both automatic tendencies to stop thinking and avoid remembering. However, in repression no verbal control is exercised over it, whereas suppression is under verbal control. A

continuum of consciousness-unconsciousness is suggested with the degree of verbal control as the units. The previous research on response suppression brings into question this type of continuum. In response suppression a response that was withheld could not be differentiated from a repressed response using a verbal continuum. None of the efforts to disentangle the meanings of repression and suppression have, to this point, been adequate.

A different approach and methodology was recently suggested by Worell (in press) in which repression and suppression were viewed as lying on a single continuum of accessibility of punished behavior.

A fundamental question was raised of how it is that behavior associated with some punishing circumstances is less accessible than behavior associated with other (and often equivalent or stronger in intensity) punishing conditions? Worell proposed that differential accessibility can be produced among a set of equally punished behaviors depending upon the position of each behavior within a "ring of punishment." This "ring" basically consists of a series of <u>continuing</u> and <u>related</u> punishments. Continuing was defined as potential or real punishment always present in relation to particular stimuli. In turn, punishments may be related in two general ways: 1) by the continuous reoccurrence of the same punishment and 2) by continguity and generalization.

The "ring of punishment" is illustrated by the following figure in which stimulus situation, response and punishment, are respectively represented by the letters S, R, and P:

$$S_1 \longrightarrow R_1 \longrightarrow \underbrace{\left[\begin{array}{c} R_2 \longrightarrow R_3 \longrightarrow R_4 \\ P \cdots P \cdots P \cdots P \cdots P \cdots P \end{array}\right]}_{\text{Ring of Punishment}} \longrightarrow \text{Terminates P}$$

The diagram depicts a contingent reinforcement situation in which the subject is punished for incorrect responses. Punishment consists of continuing electric shock. With the occurrence of R_1 continuous intermittent punishment is instigated. Then R_2 is elicited but it does not terminate the punishment sequence so that R_3 is evoked. But this response is also ineffective, so that finally R_4 is made which, although followed by punishment itself, also provided for the escape from the ring of punishment because no further punishment follows.

To predict accessibility of behaviors within the punishment ring, the following assumptions were made.

1) In punishment situations, the degree of accessibility of behavior is contingent on the amount of avoidance, i.e., direct and generalized punishment effects. This assumption emphasizes the single dimensionality of repression-suppression.

2) Behavior that is unsuccessful in removing punishment is less accessible (more aversive) than behavior, although punished, that leads to escape from punishment.

3) In recurring punishment situations where the punishments are of equal intensity, the amount of avoidance is dependent on generalization gradients of avoidance and approach. The negative gradients are assumed to accrue from similar or adjacent punished responses. Approach gradients derive from similar or adjacent non-punished responses and/or punished escape responses.

To illustrate, take an individual who, in addition to experiencing the ring of punishment, has also used one behavior immediately before and one behavior immediately after the ring which has been

successful. Of the four responses within the punishment ring, the response with the least amount of avoidance is R_4. This lowered avoidance is attributable to two factors: 1) R_4 led to escape from punishment (Assumption 2) and 2) the generalization of approach from the response that was rewarded following the punishment ring (Assumption 3). On the other hand, the most quantitative avoidance will be associated with R_2 as a function of the fact that this response itself was unsuccessful and is further preceded and followed by unsuccessful responses R_1 and R_3. Hence, there will be a generalization of avoidance from both R_1 and R_3 that will increase the net strength of avoidance of R_2 above that of all other responses. By applying the same assumptions to the remaining responses, the relative strength of avoidance may be determined for each. The aversiveness of R_1 is reduced by the generalization of approach from the preceding non-punished response. The aversiveness of R_3 is similarly reduced but here by the generalization from the escape properties of R_4.

Repression-suppression may then be defined. A punished behavior is likely to be relatively inaccessible, i.e., "repressed," when it is both preceded and followed by punished responses that are unsuccessfully resolved, or ringed by punishment. In contrast, a punished behavior is most likely to be comparatively accessible, i.e., "suppressed," when it brings about the termination of a punishment sequence. It is important to note that toward the "suppressed" end of the continuum responses may or may not be inhibited in any given situation. If the situation elicits competing responses that are stronger, then the suppressed response will be inhibited. However, when the situation requires that the suppressed response be evoked,

it will appear despite the fact that it has been previously associated with punishment.

In a study testing these theoretical implications, 36 subjects were each asked to give an association to 48 nonsense syllables. The syllables were divided into sequences of 12, numbered one through four. Half of the subjects received sequential but intermittent shock within sequences one and three and half on two and four for their associations to eight predetermined nonsense syllables. Further control was exercised over the appearance of the unavoidable shock sequences in the list by presenting the sequences for half of the subjects early in the list and for the other half late in the list. Punishment intensity was equated for all subjects by using their subjective tolerance intensity limit. The major findings supported the theory. (See Figure 1.) The number of errors in learning the list of associations was significantly greater for word two than to words one, three, or four. Furthermore, word four was not significantly different from word four in the non-shocked control sequence. Therefore, the continuum of repression-suppression as defined in Worell's theory was consistent with the data.

Generalized Effects of Punishment and Repression-Suppression: Most of the research that is done in the area of generalization is concerned with one of two types, stimulus and mediated. The findings for stimulus generalization appear to be well established (Mednick and Freedman, 1960). With mediated generalization, the results have not been so clearly defined. What is known is that responding to stimuli will generally proceed along highly specific experimental dimensions as for example word similarity. Razran (1939) attempted

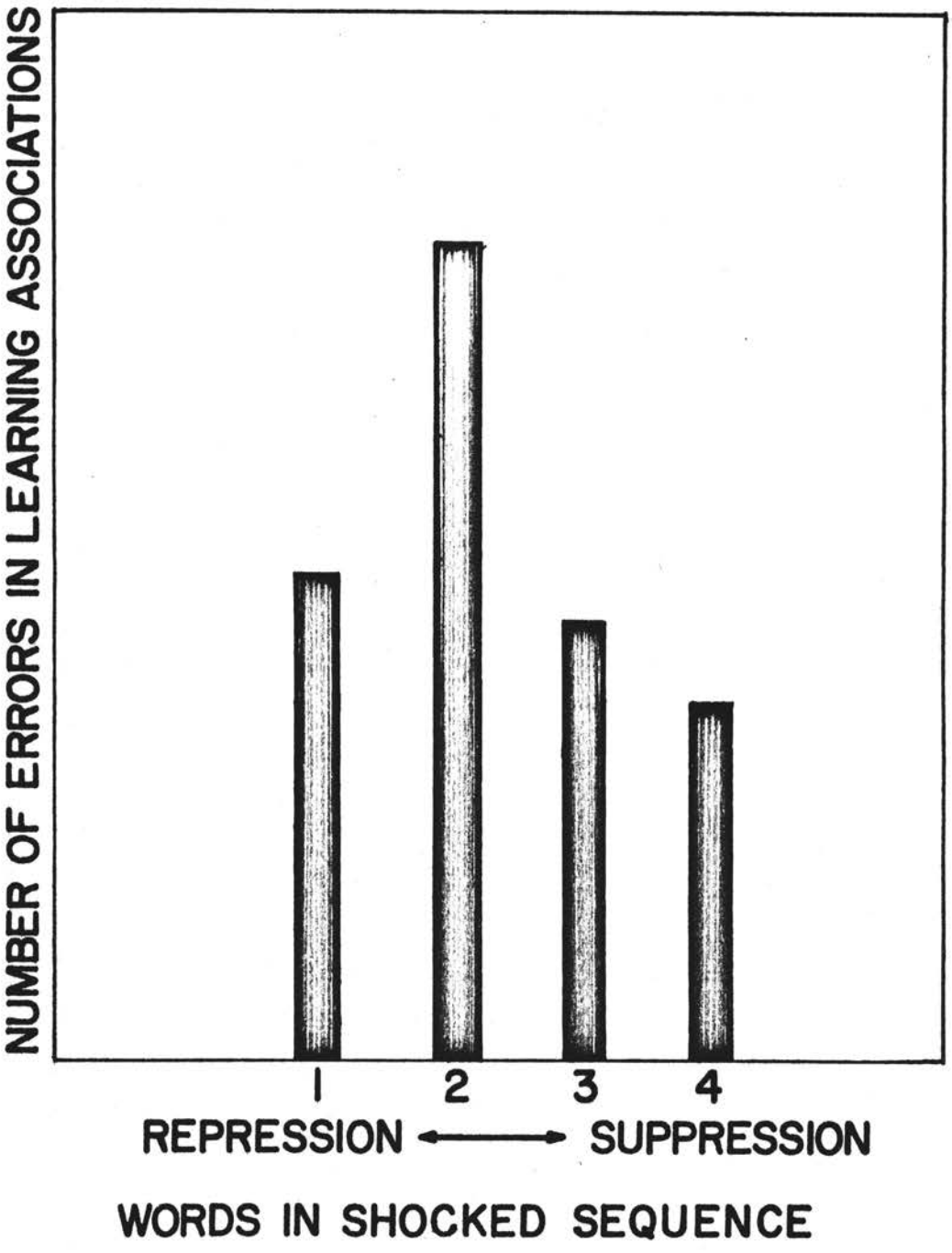

Fig. 1 Repression-suppression as evidenced by reduced availability of responses in subsequent learning

to separate the semantic factor from the phonetic or visual-auditory form of the word by use of synonyms and homophones. Four stimulus words (style, urn, freeze, surf) were flashed on a screen while the subjects were eating; the amount of salivation to each of the stimulus words and subsequently to each of the homophones (stile, earn, frieze, serf) was measured. The mean generalization was 59% to synonyms and 37% to homophones, indicating that verbal conditioning was largely semantic. Riess (1940) repeated Razran's 1939 study using the same stimulus and test words but employing galvanic skin response measures to a louder buzzer as a substitute for the salivary technique. Riess also found generalization to be greater to synonyms than to homophones. Wylie (1940) also used the same stimulus and test words as Razran and Riess, but in this case GSR was elicited by shock given to certain words and then generalization was tested to homophones and synonyms. The same results occurred as in the two former studies. In other work Diven (1937) and a later better controlled replication by Lacey and Smith (1954) subjects chain-associated to stimulus words. After the list was completed, an electric shock was given to the word "barn" which had appeared six times on the list. Five minutes later the list was given again without shock and the subject's heart rate was measured. Not only was heart rate conditioned to the word "barn," but it was also generalized to the responses which were rural types of words with greater magnitude than to the original shocked word. This group of studies indicated that at least under certain circumstances mediated generalization can be expected to occur.

The few studies that are specifically pertinent to generalization and repression also appear to be concerned with mediated generalization.

Zeller (1950) showed that failure in a specific task which did not imply general incompetence on the part of the individual did not affect relearning or recall of previously learned tasks, retention of the associated tasks was as much disrupted as if the associated tasks themselves had been failed. These findings point to a generalization along the lines of mediated similarity through instructions. McGinnies and Sherman (1952), it may be recalled, used eight pairs of words, half of which had a taboo word followed by a neutral word, and half were composed of two neutral words. A greater delay in responding occurred to a neutral word following a taboo word than a neutral word following a neutral word. However, these findings are subject to several interpretations, such as the possible spread of effect or anticipatory responding.

A segment of the research reviewed in this section has been concerned with the effects of aversive stimuli in producing a mediational type of generalization. None of the research in this area has attempted to determine the effects of sequential punishment on mediated generalization.

One of the major problems under study in this research is the effect of mediated generalization in relation to sequentially punished behaviors and other responses which are not punished but are synonymous. In relation to the previous work covered on repression-suppression (Worell, in press), the interest is in whether differential effects of sequential punishment will generalize along mediated similarity lines. In Figure 2 the predictions are depicted. Here the black columns represent the number of errors in learning the associations within the shocked sequence, whereas the white columns represent

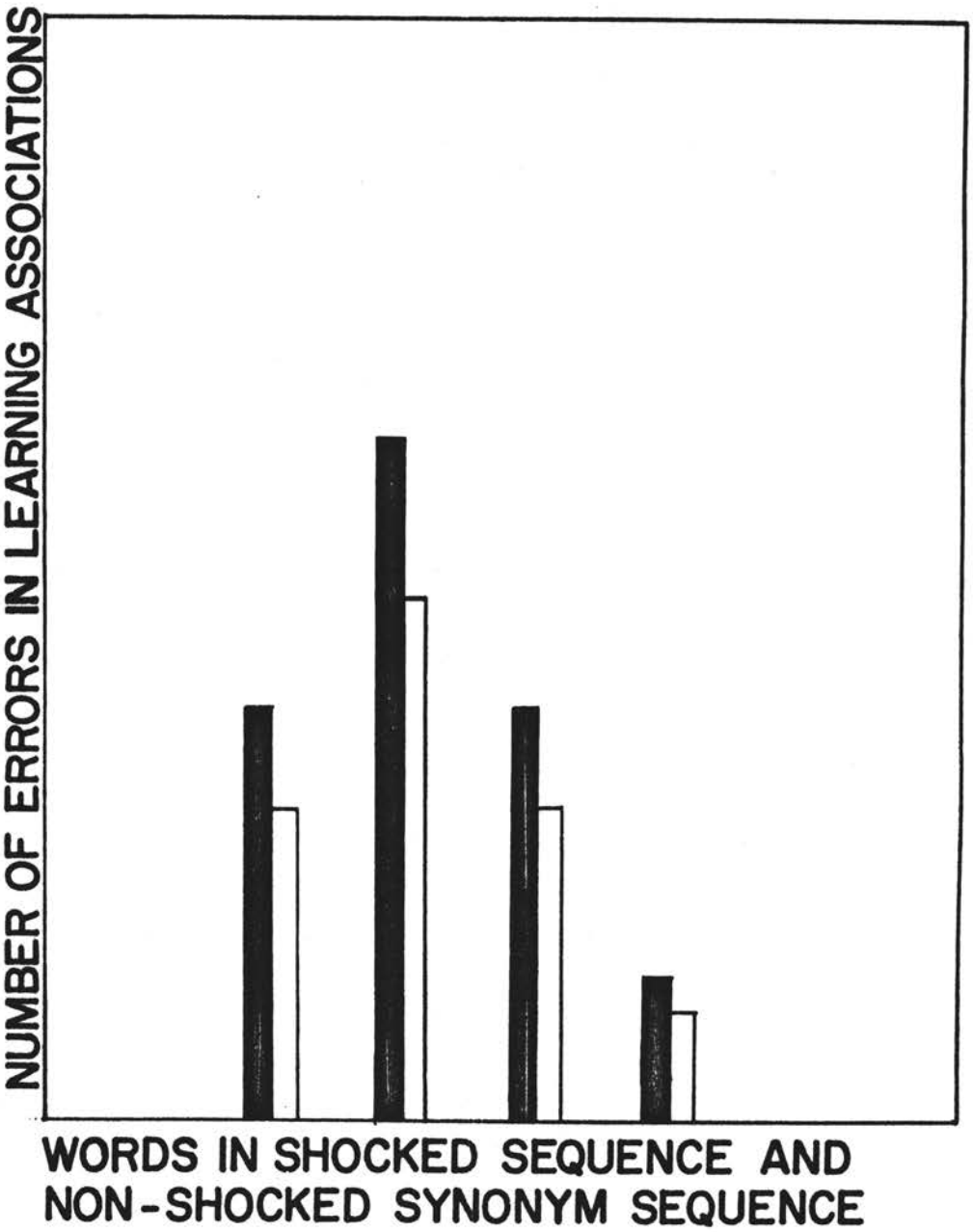

Fig. 2 Theoretical expectations for mediated generalization

the number of errors in learning the associations to the synonym non-punished, generalized words. Within the shock sequence itself, the gradient of generalization depends on summative generalization gradients of approach-avoidance. Evidence of mediated generalization would consist of a proportional gradient occurring to words which are not within the punishment sequence but were closely related in meaning.

The Role of Personality in the Effects of Punishment on Repression-Suppression: The most consistent and reliable finding in Church's (1963) review of the effects of punishment on behavior was that response rate was markedly lowered when punishment was contingent on a response as compared with non-contingent punishment. In light of these findings, some knowledge of the personality of the subject may be important. The foundation for this approach in the "repression" area was suggested by Alper (1946, 1957). Using ego-strength and n-Achievement measures, she was able to predict the group to which the subjects belonged by their recall performance on completed and incompleted tasks.

The significance of a personality factor is again seen in a study by Lazarus and Longo (1953). They selected subjects from a previous study by Eriksen (1952). These subjects fell at the two extremes of recall in Eriksen's experiment, that is, they recalled predominantly completed sentences or incompleted sentences. These subjects had to learn ten pairs of nonsense syllables by using the anticipation method under threat that on five of the pairs, regardless of whether their anticipation was correct, they would be shocked. Twenty-four hours later they returned and were asked to recall as many of the syllable pairs as possible. The subjects who recalled

their successes best in Eriksen's study also recalled the non-shocked syllables more effectively. Those who recalled their failures more effectively, also recalled more shocked words. The findings were interpreted as evidence of a consistent "ego-defense" process reflected in selective recall and operating in the two threat situations. These findings are in agreement with Alper of a consistent personality factor.

The foregoing studies used what might be termed "common sense" approaches to the relation between personality and punishment. Church's (1963) review, however, points to research where a specification of the type of degree of response can be predicted because the contingencies of reinforcement of behavior are known. Therefore, if an instrument were available that would make an assessment of the contingencies a person holds for obtaining reinforcement, then the effects of sequential punishment on generalization of these contingencies to the experimental situation may be studied.

A scale that uses expectancies people hold for being reinforced as a result of their behaviors is the Social Reaction Inventory (Liverant and Scodel, 1960). In this case, expectancy and contingency can be thought of as having similar meaning since they both refer to an attitude held by a person in relation to the behaviors he uses to obtain satisfaction or avoid punishment in a situation. This scale was developed because of the realization that the intensity or strength of an attitude is not sufficient to estimate the degree to which the individual will commit himself toward action to obtain a desired goal. To determine the degree of commitment, the concept of internal versus external control of reinforcement was applied. Internal control suggested the degree to which a person attributed what happened

to himself to his own actions versus external control or the degree to which he attributed what happened to himself to forces outside his control.

Research which gave rise to this formulation indicated that the behavior of subjects in various experimental conditions involving expectancies for reward showed clear differences if the tasks were perceived as chance or luck or if the tasks were perceived as being tasks of skill (James and Rotter, 1958; Liverant and Scodel, 1960). More recently the I-E scale has been used in several studies. Gore and Rotter (1963) applied the scale to a group of southern Negro college students involved in current social protest against segregation. Significant differences were found between the score on the I-E scale and social action taking behavior obtained from a questionnaire. This was interpreted as indicating that although the desirable social change was commonly agreed upon, the willingness to commit oneself to overt action is determined by whether the person is externally or internally controlled. Seeman and Evans (1962) further studied patients hospitalized for tuberculosis. They found support for the hypothesis that patients who scored toward the internal control end of the dimensions knew more about their own conditions, were better informed about the disease in general, and were regarded by ward personnel as better patients.

The earlier version of the I-E scale which had 60 items was shown to demonstrate internal consistency; and using factor analysis, it was shown to demonstrate a general factor loading among the items so that the inference of a single dimension, internal versus external control, seemed warranted (Liverant and Scodel, 1960). The scale

was later reduced in number to 29 items with similar internal consistency and factor analytic findings.

In view of the broad general implications of this scale and the empirically based need for an adequate personality measure, the I-E scale was selected for this research.

Summary of the Review of the Literature

In this review of the literature we have concentrated our attention on the difficulties of various approaches to the study of repression. The definitional problems have been many. Freud used the term repression differently in different contexts and frequently interchanged the terms suppression and repression. Later analysts suggested that suppression was conscious whereas repression was unconscious. The early experimental attempts to examine repression centered around the study of hedonic tone on memory. Errors in method placed most of this research in question. Later attempts were used to examine repression and suppression using Zeigarnick's task-recall method but with a constant finding that groups in threat situations performed in a manner inconsistent with the predictions. Sears (1943) summarized the work by pointing out that there was always the confounding effect of the Zeigarnick finding itself as well as the fact that too much was left to be explained after the research was completed. A third method of examining the effects of threat on behavior used perceptual recognition thresholds. Similar difficulties were encountered here as in task recall. Groups under threat showed differential behavior which could not be accounted for either through improved control of the antecedent conditions or by greater understanding of

the response given.

The effects of punishment on behavior were carefully reviewed and the findings clearly point to the fact that punishment at times produces not only suppression but also facilitation of responses. Hence, the continuum of intensity of punishment, as suggested by some, to account for repression and suppression is also inadequate. The approach taken in this research is that differential accessibility can be produced among a set of equally punished behaviors depending upon the position of each behavior in the sequence. Repression-suppression lies on a continuum of degree of accessibility in which repressed responses are less accessible than suppressed responses. Little or no research adequately demonstrating the effects of mediated generalization in repression was found. The major aim of this research is to examine stimulus content, personality, and generalization in relation to sequentially delivered punishments that produce repression-suppression.

Objectives of Present Research

At present there is an interest in extending the model of availability of equally punished responses proposed by Worell (in press). Specifically, the interest applies to the following areas:

1) Since clinical views have stressed the importance of sex and hostility, an examination of the effects of continuing sequences of punishments of equal intensity on responses related to these areas will be made.

2) Will generalization to non-punished stimuli take place differentially according to sequentially punished behavior?

3) Do individuals who perceive reinforcements as contingent on their own behavior respond differentially to those who perceive reinforcements as occurring by chance?

4) Will subjectively defined intensity of punishment produce differential effects on the availability of behavior, hence repression-suppression?

5) Are individuals able to identify or show awareness of behavior that has been sequentially punished?

6) Will the number of punishments experienced sequentially produce differential responding?

7) Do latency measures indicate differential responding to sequentially punished responses?

CHAPTER III

METHOD

Introduction

The following discussion of the present research will be composed of two major parts. The first will deal with the preliminary research conducted for the purpose of gaining a better understanding of several of the variables which were to be used in the experiment proper. The second part will present the experiment proper.

Preliminary Research

Three preliminary studies were conducted.

The purpose of the first study was to examine the difficulty in memorizing lists of words belonging to different classes, i.e., sex, hostile, and achievement. Three lists of 25 words each were prepared. The words were selected from Gough's adjective check list and from research on perceptual defense. Each list was given to 10 subjects. The words were projected on a wall at the rate of one every three seconds. The words within each presentation were randomized. No significant differences in rate of learning were found.

In the second study 20 words were selected from the lists in study one; 12 were achievement words, 4 hostile words, and 4 sex words. The words were matched for length and frequency of first letters.

The procedure was divided into two phases. In the first, subjects were seated and a shock tolerance level obtained. Part of the apparatus consisted of a box containing two lights which were attached to the wall toward which the subject was facing. The other apparatus was a slide projector which would project the words of the list on the wall directly beneath the box which contained the two lights. The subjects were instructed that a word would be flashed on the wall; they were to pronounce the word and then guess which of the two lights would come on. They were further told that there was a prearranged sequence in which the lights would come on, and to avoid shock, they must discover the sequence as soon as possible. Actually the sequence was controlled by the experimenter such that two sequences of prearranged shock would occur. The shock was administered for the 4 sex words and for the 4 hostile words. The list of 20 words was projected only once in phase one. Three days later, phase two began. At this time the subjects were given a free recall period and were then asked to memorize the list of 20 projected words from phase one. The list was randomized; and after each completion of the list, the subject was asked to recall as many of the words as possible. This continued until the subject recalled all of the words in a single recall period. Twenty subjects were used. Significant results were not found because the subjects failed to associate the reason for punishment with the stimuli on the word list.

The third study eliminated the light variable and used a word rating scale and the I-E scale. The I-E scores were used as a basis for the selection of subjects. The 75 words which had been used in the first study were given to several introductory psychology classes

with the instructions that words were to be rated on a specially constructed scale. This scale provided spaces for classes of words to be rated on a continuum of unpleasantness to pleasantness (See Appendix B). From the word ratings, 11 achievement, 7 hostile, and 7 sex words were selected on the basis of the individual subject's ratings. Of these words, 4 hostile, 4 sex, and 8 achievement words composed the list which was to be projected. The remaining 9 words, 3 from each of the classes of words, were printed on paper. Their function was to assess the effects of generalization. In phase one the subject was seated, and he was asked to write an association to each of the 9 words printed on the paper. His shock tolerance was then obtained. The 16 words composing the projected list were then presented one at a time, and the subject was instructed to give an association out loud to each. He was then told that he would be shocked if his associations were unhealthy. Again two sequences of stimulus words were shocked regardless of the association which the subject gave. One sequence was of sex words and one of hostile words. When the shocking was begun, it continued at three-second intervals until the sequence was completed. The list of 16 words was presented once.

Phase two of study three began three days later. Electrodes were again attached, and three shocks were arbitrarily given at the subject's previous shock level. Free recall was obtained, and then all of the stimulus words from phase one (16 projected words and 9 printed words) were projected on the wall one at a time at three-second intervals. The subjects were instructed to recall the associations which they had given to each word within the time interval. If they were unable to do so, the experimenter gave the correct association.

This continued until all 25 associations could be given in a single trial. The order of presentation of the projected list was randomized after each trial. The results showed a generalization effect within the sequences of shocked words for sex words which supported the findings of Worell (in press) that sequentially administered shock does not affect all responses equally within the sequences. However, the findings did not show a generalization effect to non-shocked words of the same class. This failure to generalize beyond the actual punishment situation suggested that a closer similarity must exist between the two situations. To correct for this, synonyms were used in the present investigation.

The Experiment Proper

General Procedure:

Phase I

Administration of personality tests

Phase II

Punishment

A. Presentation of List A or B of synonyms
B. Shock tolerance limit determined
C. Presentation of projected lists of 16 hostile and 16 sex words

Phase III (Three days later)

Learning

A. Electrodes attached and 3 shocks administered
B. Free recall of stimuli and subject's own responses from Phase II
C. Learning of own responses from Phase II

Selection of Subjects: Tests were given to 423 males in the introductory psychology classes at Oklahoma State University. The

I-E scale and a word rating scale were used. (See Appendixes A and B.) The latter scale was the same scale used in pilot study three with the exception of an additional instruction that the subject place a question mark after any word which was unknown to him. Subjects were selected on the basis of their scores on the I-E scale; only the upper and the lower thirds of the distribution were selected. From this population, 96 subjects volunteered; 48 were from the upper third of the I-E distribution, and 48 were from the lower third of the distribution.

Composition of Word Lists: The list to be projected in Phase II was composed of 16 hostile words and 16 sex words. (See Table I.) These words were selected from the word rating scale because fewer than 4 people out of the 96 indicated that the meaning was unknown to them. Twenty-four of the words had no question marks; 8 of the words had from 1 to 3 question marks. These 8 words were replaced in Phase III.

Two lists of 8 words each were prepared which were synonymous with the shock words on the projected list in Phase II. Two lists were necessary since a different sequence of shock was used for each group of 48 subjects. Five synonyms for each of the 16 words from the projected list were obtained from a dictionary and a thesaurus and presented for rating to 100 students. Synonyms rated the closest in meaning for each of the 16 words were chosen for this research.

The composition of the projected word list in Phase III can be seen by referring to the list of words in Table I. If a subject were shocked for sequences 1 and 3 in Phase II, his projected list in Phase III would be composed of the following: 1) the words in

TABLE I

PROJECTED WORD LIST AND SYNONYMS
USED IN PHASE II

Sequences of Shock		Words	Synonyms
	1.	Orgy	
	2.	Abortion	
1	3.	Belly	Stomach
	4.	Raped	Assaulted
	5.	Chastity	Untouched
	6.	Bitch	Slut
	7.	Excretion	
	8.	Bed	
	9.	Brassiere	
	10.	Filth	
2	11.	Breast	Nipple
	12.	Adultery	Unfaithful
	13.	Virgin	Untouched
	14.	Intercourse	Relations
	15.	Circumcision	
	16.	Erection	
	17.	Defensive	
	18.	Impolite	
3	19.	Brutal	Savage
	20.	Rebellious	Defiant
	21.	Intolerant	Prejudiced
	22.	Bitter	Harsh
	23.	Unkind	
	24.	Excitable	
	25.	Resentful	
	26.	Dominant	
4	27.	Arrogant	Overbearing
	28.	Cruel	Mean
	29.	Destructive	Harmful
	30.	Irritable	Annoy
	31.	Forceful	
	32.	Aggressive	

sequences 1 and 3, 2) their synonyms, and 3) words in sequences 2 and 4 for which he did not receive shock. The remainder of the list was composed of 8 non-critical words from the Phase II list which were the same for all subjects. These were the following: excretion, bed, brassiere, erection, forceful, resentful, dominant, and impolite. If a subject were shocked for sequences 2 and 4 in Phase II, his projected list in Phase III would be composed of these words: 1) the words in sequences 2 and 4, 2) their synonyms, and 3) words in sequences 1 and 3 for which he did not receive shock. The remaining 8 words were, as stated, the same for both groups.

Specific Procedure: Phase II began when the subject appeared for his scheduled appointment. It was divided into three stages. In stage one the subject was seated in a chair facing a wall upon which stimulus words would later be projected. He was given a paper on which were printed 8 words, and he was instructed to write an association to each. In stage two electrodes were attached to the right forearm of the subject, and a measure of his upper tolerance for electric shock was obtained. The subject was encouraged to take all the shock he could before it became painful, and subsequent reports indicated this was the case. Following this, stage three began with the reading of these instructions:

> Because of the ratings you made on the scales administered in your Psychology 213 class, you have been selected to participate in an extensive investigation. The purpose of the investigation is to develop methods for the prevention of both sexual and social maladjustment. This same scale has been given to introductory psychology students at such universities as Yale, Ohio State, Minnesota, Texas, and Stanford. The results indicate a close relationship between the ratings on the scale and the adjustment of the person both sexually and in hostile situations. Follow-up studies on the people rating the scale have

further increased our confidence in the relationship between adjustment and the ratings given on the scales.

Your ratings present a picture of a person who may have difficulty in either or both the areas of sex or hostility, consciously or unconsciously. By giving your fullest cooperation by making yourself available for both parts of this experiment, the information can be collected quickly and the findings passed on to you.

In part one of this research, you are to concentrate your attention on the wall in front of you. Words will be projected on the wall one at a time. When a word appears, you are to give an association to the word aloud. If that association which you give is a healthy association based on the data obtained from the research already completed, you will receive no shock; however, if the association is unhealthy, you will be shocked. Note that you may feel that the responses you give are healthy and tend to discount that you are shocked for them. However, based on the information which we have obtained about you, it is possible to evaluate healthiness or unhealthiness of your responses with great accuracy. As an X-ray machine is able to "see through" tissue to the bone structure beneath, this experimental situation is able to diagnose reactions as healthy or unhealthy by seeing through the kinds of responses that are given. The sequence again is this. A word is flashed on the wall; you give a one word association to it. If it is healthy, no shock; if it is unhealthy, shocking begins and continues intermittently. Another word is flashed on the wall, if the association to it is healthy shocking ceases; if it is also unhealthy, shocking continues and so on until all of the words in the list have been shown.

Remember, be certain to give only one association to each word and do not use the same association twice.

Each of the 32 words was then shown one at a time. The subject was shocked by an intermittent pulse occurring every three seconds when the unavoidable shock sequences appeared to which the subject had been assigned. The list was projected once.

Phase III began three days later for each subject. The subject was again seated; the electrodes were attached, and three shocks were arbitrarily administered at his previous upper tolerance level. The electrodes remained attached for all of Phase III. A free recall

period followed in which the subject was asked to recall as many stimulus words and his associations to them as possible from Phase II.

Instructions for Phase III were read. They were the following:

> In part II of the research the words to which you have given an association in part I will be flashed on the wall one at a time. You must supply the association which you gave to it in part I. You will be given a limited time in which to give the same association. If you don't give the same association, I will give it to you. This procedure will continue until you can give the same association to all of the words in a single trial.
>
> Are there any questions?

Each of the words was then projected at three-second intervals. The list was randomized for each trial. After the subject had learned his associations, the stimulus words were presented once again. This time the subject was asked to recall whether the associations he had given to the words had been shocked. Immediately after this, three questions were asked: 1) "Was the shock strong enough?" 2) "What effect did the shock have upon you?" 3) "Did you feel your associations were unhealthy and hence punishment was justified for them?" The subjects were taken to another room and there asked to re-rate the initial list of words given to him in Phase I.

Specific Experimental Controls: Three additional control measures were used.

I. Order of presentation of class: The projected word list consisted of 16 sex and 16 hostile words (see Table I). To control for any effect that presenting one class of words first might have on the subjects' responses to shock, half of the subjects who had high I-E scores (24) received sex words first, and the other half of the high I-E scores (24) received hostile words first.

II. Early shock versus late shock: To control for possible effects of receiving the shock sequence early in the list of sex words and early in the list of hostile list, half of the subjects received shock early in the list, and half received shock late in the list. For example (see Table I) 48 subjects were shocked for sequences 1 and 3 which occurred early in the lists of sex and of hostile words, and 48 subjects were shocked for sequences 2 and 4 which occurred late in the lists of sex and of hostile words.

III. Position of words within the shock sequences: The shocked sequences for each subject contained 4 words each. In order to control for the possibility that one of the words in the shocked sequences might produce more difficulty or less difficulty for subjects in giving associations, each of the sex words appeared in position 1, in position 2, etc., an equal number of times within its own sequence of shocked words. The hostile words were distributed in the same manner.

General Design: For analysis the 2x2x2x3x2x4x12 experiment was regarded as a split plot with three factors (A,B,C) completely randomized as in a completely randomized design and three factors (D,E,F) within each main plot. The subjects were thought of as the main plots.

Forty-eight of the 96 subjects were assigned to the High I-E group, and 48 were assigned to the Low I-E group. Figure 3 presents the subsequent division into sub-groups of the 48 subjects in the High I-E group. The Low I-E was divided similarly.

Personality Measures:

I. The word rating list: The word rating list was obtained

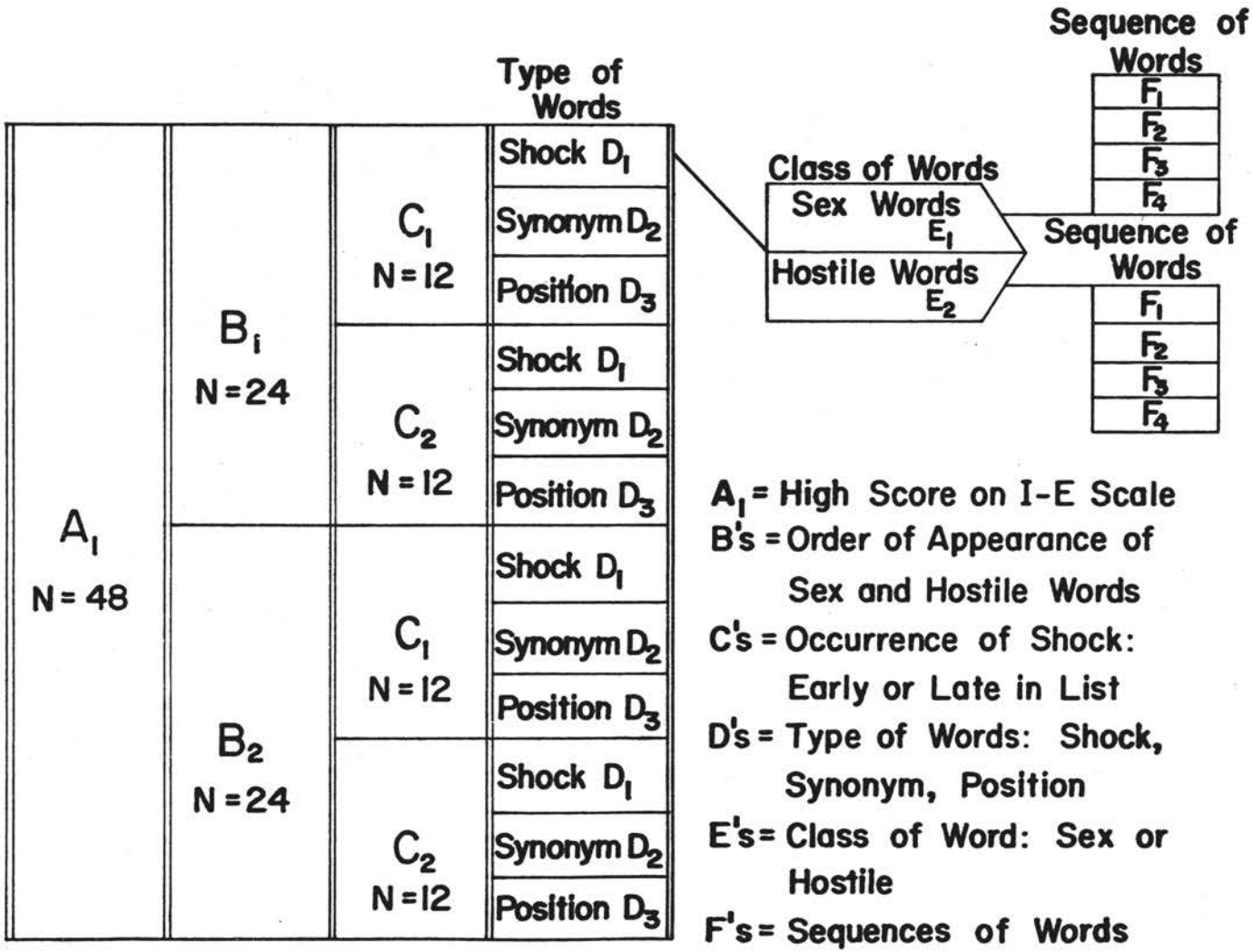

Fig. 3 Division and subdivision designations for High I-E

from the adjective check list developed by Gough (1960) and words commonly found in research in the area of perceptual defense. The scale on which the words were rated consisted of a continuum from pleasant through neutral to unpleasant. (See Appendix B.) Subjects were asked to rate each word on this scale depending on the degree of pleasantness or unpleasantness the meaning of the word had for them. The purpose of the scale was to assess the amount of variability which results from exposure to punishment and to determine whether the subject knew the stimulus words to be projected subsequently.

II. The I-E scale: The I-E scale (Liverant and Scodel, 1960; Rotter, Seeman, and Liverant, 1962) consists of 29 forced choice items. Twenty-three are discriminators between internals and externals, and 6 are filler items. (See Appendix A.) The purpose of the scale is to estimate the control a person feels he personally exercises over his environment.

Materials: A Sawyer 500 slide projector was used for stimulus presentation.

The electric shock applicator could deliver 2 milliamperes of current in graded increments of .1 milliamperes at any desired time interval. The shock was delivered through a pair of electrodes attached to the forearm of the subject. To prevent burns and insure good contact, electrode paste was used. The shock apparatus was built by the Research and Development Laboratory at Oklahoma State University.

CHAPTER IV

RESULTS

The presentation of this section will follow a procedure of sequential consideration of each of the hypotheses. For convenience, in some of the analyses, various factors have been identified in the following manner: high and low scores on the I-E scale were A, sex words first or last B, shock early or late C, types of words (shock, synonym or position) D, class of words (sex or hostile) E, and the four words within the sequence F.

General Analysis

The data itself is frequency data, for the most part, and hence does not meet the assumptions for parametric analyses until an appropriate transformation is performed. However, in order to meet the requirements of various theoretical positions regarding correct statistical analyses which exist within the field of psychology, both parametric and non-parametric analyses were used.

Generalization to Non-Punished Stimuli: Consistent with the first hypothesis, generalization to non-punished stimuli did take place differentially according to sequentially punished behavior. To assess the effects of generalization to non-punished sequences a Friedman two-way analysis of variance was used. The findings indicated a significant difference among the groups of shocked,

synonym and position sex words (X_r^2 44.73, <.001 df 2) as well as among the three groupings of hostile words (X_r^2 12.40, <.01 df 2).

To determine the specific meaning of the Friedman analysis, separate chi square analyses were performed on the totals for sex words within the three sequences (shock, synonym and position). (See Table II.) Chi square values for differences between shock and synonym (21.82), shock and position (63.20), and for synonym and position (11.04) were significant beyond the .001 level. These values mean: 1) that punishment directly affects response learning to sex words, 2) that punishment, via mediation, also affects synonyms that have not been directly punished, and finally 3) words which were more removed in meaning from the punished words were affected least by the mediated punishment. A similar analysis for hostile words revealed a chi square value for the difference between shock and synonym (7.98) which is significant at beyond the .01 level but no differences between shock and position or synonym and position. Hence, generalization occurs along lines of similarity for sex words, whereas a generalization gradient was not found with hostile words.

Next, attention was turned to the question of whether a gradient of errors was obtained with the shocked sequence itself. Chi square analysis revealed that word two is significantly different from words one, three and four. (See Table III.) Furthermore an inspection of Figure 4 indicates that a gradient of errors is obtained with R_2 showing the largest number of errors followed by R_1 and R_3 with the least for R_4. These findings confirm those previously obtained by Worell (in press) but the principal interest here was in whether

TABLE II

TOTALS FOR 96 SUBJECTS FOR FACTORS DEF

		Shock	Synonym	Position
Sex	1	125	103	79
	2	291	168	119
	3	141	130	112
	4	94	92	84
	Total	651	493	394
Hostile	1	308	241	304
	2	315	253	253
	3	283	247	304
	4	270	302	248
	Total	1176	1043	1109

TABLE III

CHI SQUARE COMPARISONS BETWEEN WORD TWO AND OTHER WORDS IN SEQUENCES

	Sex	Hostile	Sex	Hostile	Sex	Hostile
2 vs 1	66.24***	.0786	15.58***	.2914	8.080**	4.6696*
2 vs 3	42.08***	1.712	4.84*	.0720	0.1082	4.6696*
2 vs 4	100.80***	3.462	22.22***	4.326*	6.034*	.0500

*p = <.05
**p = <.01
***p = <.001

this specific gradient would generalize to the non-shocked synonym words. An examination of Figure 4 shows that the gradient from shocked to synonym words is preserved very closely. A similar analysis was done for the synonym sequence. Here it was found that word two in the synonym sequence was significantly different from words one, three, and four. (See Table III.)

Both of these analyses and the figure point clearly to a proportionate generalization of sequential punishment to non-shocked synonym material in the sex area.

Turning now to the position sequence in Figure 4, it is observed that the gradient obtained in the two previous analyses was not found here, rather the ranking of the words within the sequence is, R_2 first, R_3 second, R_4 third and R_1 last. Again using chi square analysis, R_2 was significantly different from R_1 and R_4 but not different from R_3. Therefore, as predicted, specific generalization was not found to occur to position words.

Similar comparisons as above for hostile words yielded significant differences in the synonym sequence between R_2 and R_4 and in the position sequence between R_2 and R_1 and also R_2 and R_3. However, the gradients found were in no way consistent with those found with sex words. Rather the findings with hostile words are probably a function of the difficulty of the words which will be elaborated on more fully in the discussion. (See Figure 5.)

It is also significant to note that the above data was analyzed through an analysis of variance. The findings with this analysis paralleled those obtained with the non-parametric analyses. (See Table IV.)

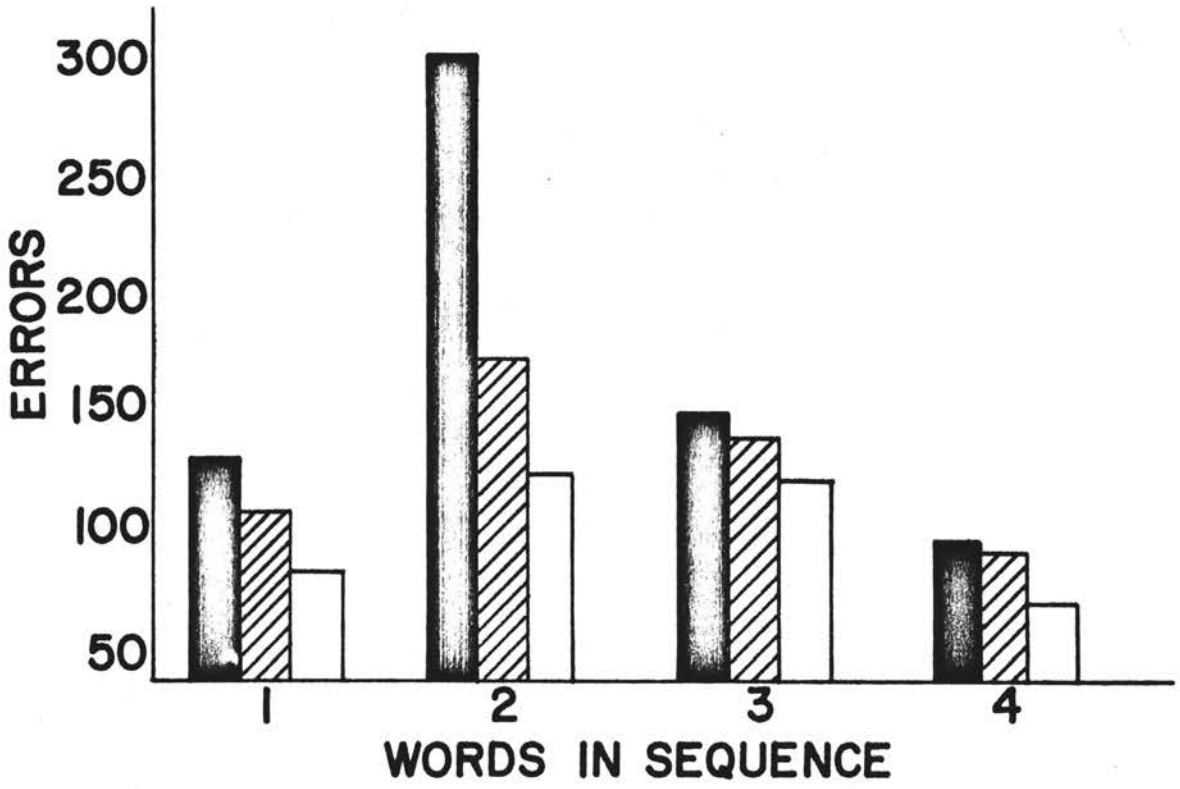

Fig. 4 Comparisons of total errors made in learning associations in phase III for sex words to shock, synonym, and position words. Shock = black column, synonym = stripped, position = white column

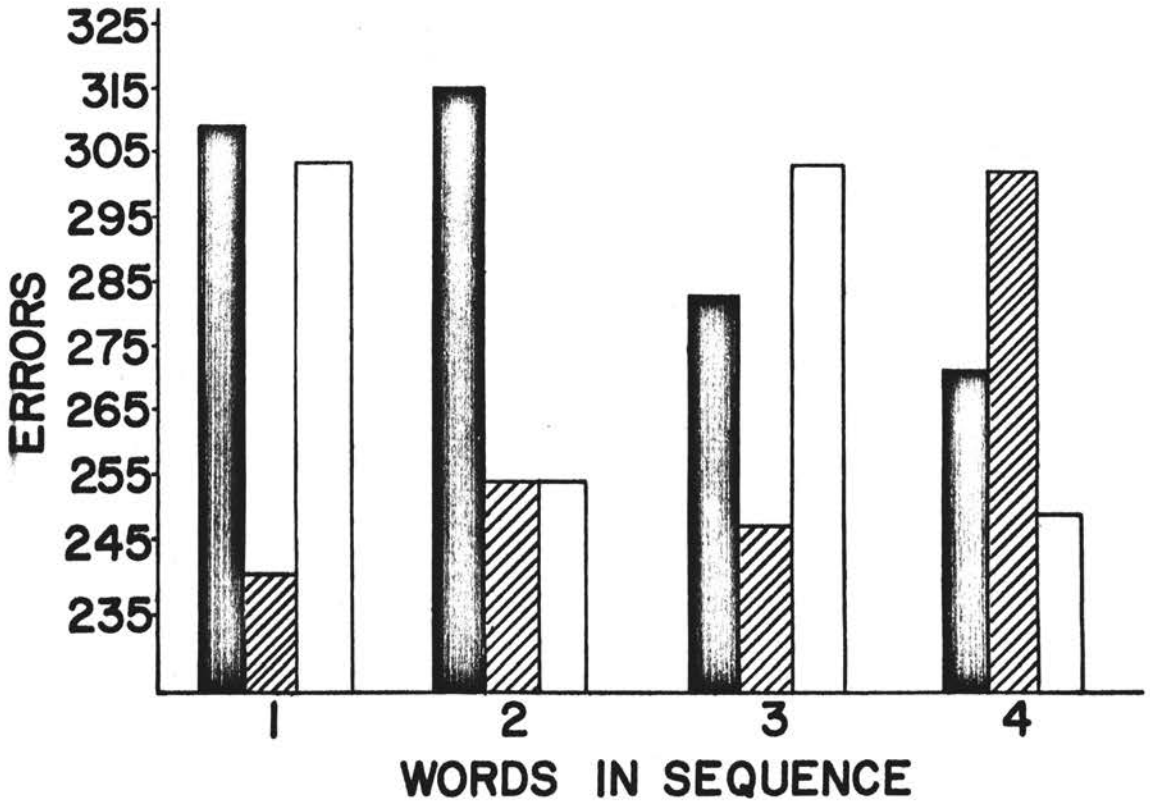

Fig. 5 Comparisons of total errors made in learning associations in phase III for hostile words to shock, synonym, and position words. Shock = black column, synonym = stripped, position = white column

TABLE IV

ANALYSIS OF VARIANCE FOR ERRORS

Source	d.f.	MS	F
Total			
A	1	0.29254577	
B	1	0.21700069	
AB	1	1.38238806	
C	1	0.15916775	
AC	1	1.03064796	
BC	1	2.48430136	
ABC	1	0.00019600	
Error (a)	88	1.0585	
D	2	3.24473289	15.8280***
CD	2	0.16169158	
BD	2	1.39431167	6.8015**
BCD	2	0.28084244	
AD	2	0.12037672	
ACD	2	0.29665342	
ABD	2	0.01267644	
ABCD	2	0.20524255	
E	1	97.93411469	477.7274***
DE	2	1.52906511	7.4589***
CE	1	0.33524100	
CDE	2	0.17776852	
BE	1	0.00887521	

TABLE IV (Continued)

Source	d.f.	MS	F
BDE	2	0.15966438	
BCE	1	0.27470702	
BCDE	2	0.05871285	
AE	1	1.47399834	7.1902**
ADE	2	0.10854863	
ACE	2	0.46991025	
ACDE	2	0.06401176	
ABE	1	0.30927502	
ABDE	2	0.04181468	
ABCE	1	0.65333542	
ABCDE	2	0.05647418	
F	3	2.81424938	13.7280***
EF	3	2.55001966	12.4391***
DF	6	1.27258595	6.2077***
DEF	6	0.61434107	
CF	3	0.18362243	
CEF	3	0.18852078	
CDF	6	0.13795292	
CDEF	6	0.32767176	
BF	3	0.04978981	
BEF	3	0.02927948	
BDF	6	0.38978841	
BDEF	6	0.22207024	
BCF	3	0.26822214	
BCEF	3	0.12608647	

TABLE IV (Continued)

Source	d.f.	MS	F
BCDF	6	0.16846024	
BCDEF	6	0.04491636	
AF	3	0.14313612	
AEF	3	0.68196305	
ADF	6	0.25978656	
ADEF	6	0.25566570	
ACF	3	0.21698662	
ACEF	3	0.19818562	
ACDF	6	0.28058213	
ACDEF	6	0.52429776	
ABF	3	0.10910343	
ABEF	3	0.05439442	
ABDF	6	0.10160025	
ABDEF	6	0.11448837	
ABCF	3	0.00904337	
ABCEF	3	0.09073005	
ABCDF	6	0.26949879	
ABCDEF	6	0.09753705	
Error (b)	2101	.2050	

*p = <.05
**p = <.01
***p = <.001

In general, the foregoing analyses supported the theoretical expectations of both a global mediated generalization from punished to synonym material and highly specific mediated generalization from a sequential punishment gradient to a synonym non-punished sequence.

I-E Scale Performance: The second major hypothesis was that people would differ in performance based on whether they viewed their behavior as internally or externally controlled. Two general measures were examined. The first consisted of eleven response indices obtained during the learning of the associations (Phase III) and a second, the completion again of the rating scale of three groups of words (sex, hostile, and achievement) used initially in Phase I. Now considering the eleven indices, the only significant results were observed in the total number of correct words recalled, the number of correct associations recalled, and in greater recall of hostile words during free recall. In all instances, the externally controlled subjects (high scorers) were superior in recall. In view of the findings that eight out of the eleven indices were not significant, an interpretation of the three significances is only suggestive of the fact that externally controlled people were less affected by the punishment situation. (See Table V.)

Turning now to a consideration of the effects of punishment on words on the rating re-rating scale, the results indicated that internally controlled people (low scorers) showed a significantly greater shift toward the unpleasant end of the continuum on re-rate of both shocked and non-shocked sex words than the internally controlled subjects (high scorers). (See Table VI.) The shift observed above

TABLE V

CHI SQUARE COMPARISONS OF HIGH AND LOW I-E SCORES ON ELEVEN RESPONSE MEASURES

	Hi	Lo	X^2
No. of Control Words Free Recall (Sex)	69	64	---
No. of Control Words Free Recall (Hostile)	20	14	---
No. of Shocked Words Free Recall (Sex)	62	70	---
No. of Shocked Words Free Recall (Hostile)	26	12	5.14*
No. of Correct Total Words Free Recall	389	330	4.84*
No. of Correct Associations Free Recall	240	188	6.30*
No. of Correct Shocked Words Identified After Learning (Sex)	53	46	---
No. of Correct Shocked Words Identified After Learning (Hostile)	27	27	---
Question I	43	46	---
Question II	37	41	---
Question III	18	24	---
No. of Trials to Learn Associations	355	316	---
No. of Shocks	1765	1879	---
Amount of Shock	67.08	76.03	---

*p = <.05
**p = <.01
***p = <.001

TABLE VI

RATE RE-RATE DIFFERENCES FOR SEX WORDS

	Hi	Lo
Shock	-13	-33
Non-Shock	+ 4	-39

1. A change toward the pleasant end of the continuum equaled a plus while a change toward the unpleasant side equaled a minus. The size of the number depended upon the extent of change. Therefore, a change from slightly unpleasant to moderately unpleasant equaled a -1, to strongly unpleasant -2, etc. The converse was true if the change were in the pleasant direction except that a positive sign was used. The scores in the table represent a total of all + and - changes.

2. *Hi Shock vs Hi Non-Shock X^2 = ----
   Lo Shock vs Lo Non-Shock X^2 = .25 < .70
   Hi vs Lo Shock X^2 = 4.34 < .05
   *Hi vs Lo Non-Shock X^2 = ----

*A chi square cannot be performed since the signs are not the same but the difference is sufficiently large to be significant.

for both shocked and non-shocked words is an interesting finding in the light of the proportionate generalization found in learning associations in that sequential punishment affected words differentially during learning, whereas all of the sex words were affected somewhat equally in the re-rating, i.e., all tending to increase in avoidance or unpleasantness. This difference may have resulted because learning reduced the differential avoidance induced by sequential punishment but did not reduce the general avoidance to the situation as a whole.

Moving from the sexual words to re-rating of the hostile words it is found that, unlike the sex words, the predominant shift for the hostile words was to become more pleasant with the exception that the internally controlled group shifted toward the unpleasant end for shock words. (See Table VII.) This discrepancy between the directionality in re-rating of the sex and hostile words will be covered in the discussion.

Intensity of Punishment: A third aspect dealt with in this study was that those receiving greater intensities of punishment would perform differently from those receiving low intensities. Table VIII presents the analysis. Subjects who accepted greater shock intensities received a significantly larger number of shocks ($p = <.001$), took more trials to learn the associations ($p = <.01$), and made more errors in learning their associations ($p = <.01$). The results point up the fact that different degrees of punishment produce differences in responding. However, it may be noted that this intensity factor was not the critical element in producing sequential punishment effects since a gradient was found within a punishment sequence when a subject was receiving the same intensity

TABLE VII

RATE RE-RATE DIFFERENCES FOR HOSTILE WORDS

	Hi	Lo
Shock	+30	-35
Non-Shock	+21	+94

Hi Shock vs Hi Non-Shock $X^2 = 1.59$ $<.30$
*Lo Shock vs Lo Non-Shock $X^2 =$ ----
*Hi vs Lo Shock $X^2 =$ ----
Hi vs Lo Non-Shock $X^2 = 46.34$***

*A chi square cannot be performed but the differences are sufficiently large to be significant.

*p = <.05
**p = <.01
***p = <.001

TABLE VIII

COMPARISON OF THE UPPER 26% AND LOWER 26%
OF SUBJECTS BASED ON SHOCK INTENSITY

	No. of Shocks	No. of Trials to Learn List	No. of Correct Associations Free Recall
Hi Intensity	1120	173	98
Lo Intensity	945	128	149
X^2	14.84***	6.74**	10.54**

*p = <.05
**p = <.01
***p = <.001

of punishment.

Number of Punishments: Related to intensity is the question of whether the number of punishments induced a differential effect on learning. Using the upper (15%) and the lower (15%) extremes of the number of shocks received, no significant difference was found in the number of errors to learn their associations. It was also found that the number of punishments a person receives, like intensity, is not a significant contributor to repression-suppression effects following sequential punishment.

Subsidiary Analysis

Additional consideration was given to the following problems: 1) awareness of punishment, 2) post-punishment generalization, 3) sequential punishment effects on re-rating, 4) effect of punishment on common associations, 5) response latencies between punishment and non-punishment sequences.

Awareness of Punishment: The findings related to awareness of punishment indicated that subjects were not able to identify the punished words. The assessment of awareness followed the learning of associations and at this time avoidance to the specific punished words has been reduced. Hence it is reasonable to expect that differentiation of the punished from non-punished words is not possible. This procedure is but one possibility in determining awareness. Another would be to have the subjects attempt to identify punished stimuli before learning while differential avoidance is still present. In any event, lack of awareness here is consistent with findings in other research (Reece, 1954), that those who are

unaware do not perform differently from those who are aware. Awareness produced no differences in relation to sequential punishment.

Post-Punishment Generalization: Post-punishment generalization was examined by comparing errors in learning of the two words following the shocked sex sequence in group C_1 (shock early) with words three and four in the shock sex sequence. No significant difference was found although there was a tendency for a reduction in errors to occur (102 vs. 70).

Sequential Punishment Effects on Re-rating: In view of the findings of proportionate generalization of sequentially punished responses to synonym words, an analysis was performed to determine whether the same effect may have occurred in re-rating the words. No reliable effect of sequential punishment gradients was found. (See Table IX.)

Effect of Punishment on Common Associations: Interest in this study was focused on the effects of sequential punishment in the production of common or frequent associations. No difference was found between shock and non-shock sex words (139 vs. 141) or between shock and non-shock hostile words (73 vs. 74).

Response Latencies between Punishment and Non-Punishment Sequences: A last consideration was given to latencies of responding to the words within the punished sequences. The analysis of variance indicated several significant main effects, namely, B (order of occurrence of sex or hostile words), D (shock or non-shock words), and E (sex or hostile words). The findings indicated that greater latencies resulted for hostile words as contrasted with sex words, for shocked words as compared to non-shocked (both sex and hostile), and when

TABLE IX

RATE RE-RATE DIFFERENCES FOR SHOCKED WORDS

Words	Sex	Hostile
1	+ 1	-19
2	-13	+ 7
3	- 2	+ 8
4	-29	- 1

hostile words preceded sex words on the list but not the reverse. There were several two-factor interactions worth noting, i.e., CD, AD, and CE. The AD interaction showed a decreased latency for non-shocked words with the internally controlled subjects. CD presented a picture of decreased latency to non-shocked words as they appeared progressively later in the list. Finally, in the CE interaction, increased latencies were found for hostile words regardless of whether they appeared early or late in the list.

The relevance of these last three points in relation to this research is covered more fully in the discussion.

TABLE X

ANALYSIS OF VARIANCE FOR RESPONSE LATENCY

Source	d.f.	MS	F
Total	1535	0.129190830939	
A	1	0.462811355007	
B	1	3.853199323134	12.5389***
AB	1	0.017062400267	
C	1	0.2463347 58482	
AC	1	0.153144737844	
BC	1	0.4606524270 84	
ABC	1	2.403421927734	7.8211**
Error (a)	88	.3073	
D	1	1.181737326038	11.5899***
CD	1	2.684399382001	25.3484***
BD	1	0.131836873757	
BCD	1	0.611664651284	5.7759*
AD	1	0.785715665634	7.4194**
ACD	1	0.093884423151	
ABD	1	0.059353003652	
ABCD	1	0.574491605919	5.4249*
E	1	5.514425624721	52.0720***
DE	1	0.382119726626	
CE	1	0.423263480007	3.9968*
CDE	1	0.030619898438	
BE	1	0.004258537209	

TABLE X (Continued)

Source	d.f.	MS	F
BDE	1	0.075155119407	
BCE	1	0.040997293509	
BCDE	1	0.067909534969	
AE	1	0.057619345094	
ADE	1	0.046125379209	
ACE	1	0.226765170319	
ACDE	1	0.275473011459	
ABE	1	0.011941874001	
ABDE	1	0.151998197975	
ABCE	1	0.210500851204	
ABCDE	1	0.000030617357	
F	3	0.149366270291	
EF	3	0.013486015663	
DF	3	0.023159270648	
DEF	3	0.116392263572	
CF	3	0.254528184933	
CEF	3	0.038631622344	
CDF	3	0.187848500478	
CDEF	3	0.094868049494	
BF	3	0.033156671526	
BEF	3	0.133776239388	
BDF	3	0.022572653976	
BDEF	3	0.018612209429	
BCF	3	0.354385791671	

TABLE X (Continued)

Source	d.f.	MS	F
BCEF	3	0.014252811296	
BCDF	3	0.1754444699057	
BCDEF	3	0.024225069178	
AF	3	0.090128213376	
AEF	3	0.062042052200	
ADF	3	0.036882571817	
ADEF	3	0.217885089945	
ACF	3	0.119495736353	
ACEF	3	0.075676280858	
ACDF	3	0.121108557816	
ACDEF	3	0.112421217438	
ABF	3	0.266890875051	
ABEF	3	0.074466713928	
ABDF	3	0.148323315750	
ABDEF	3	0.227193384132	
ABCF	3	0.122383093023	
ABCEF	3	0.020282104221	
ABCDF	3	0.018333892793	
ABCDEF	3	0.024406324763	
Error (b)	1320	.1059	

*p = <.05
**p = <.01
***p = <.001

CHAPTER V

DISCUSSION

The major intent in this research has been to examine the effects of sequential punishment on mediated generalization in the light of the model for repression-suppression suggested by Worell (in press).

The findings indicated that two types of mediated generalization had occurred, a global and a specific type. The global type involved generalization between sequences of words that were punished and S-R pairs that were not punished but which were related in degree of meaning to the punished sequences. Hence, the total number of errors in learning associations decreased from the punished words to their synonyms (close degree of meaning), whereas the least number of errors occurred to position control words and to words (also control) which were drawn from various positions in the list other than punished, synonym, and position locations. Global generalization was found among the sex sequences, but a similar gradient was not found among hostile sequences. What was found among hostile sequences was a significant difference between the punished and synonym sequences but not between any other sequences. In view of the fact that no other differences in the hostile sequences were found, i.e., between punished and position, synonym and position, or position and random words on the list, the one difference obtained

may in all likelihood be artifactual.

Now to a consideration of the specific type of generalization found. Here, it will be recalled that comparisons were made between errors in learning associations to words one, two, three, and four within the punished sequence. Similar comparisons were made within the synonym and position sequence. It will be recalled that a gradient of avoidance generalization was found in the punished sequence, such that the R_2 was associated with the largest number of errors, R_1 and R_3 with an intermediate number, and R_4 with the fewest errors in learning. Specific generalization, then, refers to a gradient which is similar in contour to that which occurred with the punished words. Specific generalization was found among the words in the synonym sequence of sex words but not among those in the position sequence. Further, no evidence for specific generalization was found among the hostile words.

Several lines of evidence support a particular explanation, namely, that of difficulty for our findings of a differential effect of sex and hostile words. First, Glanzer (1962) found in one of two relevant experiments that in paired associate learning the grammatical category, i.e., noun, adjective, etc., was important in that nouns were learned significantly faster than any other categories. In the present research, the sex words were all nouns and were learned significantly more readily than the hostile words which were all adjectives. Secondly, the findings of this research and that of Glanzer are in agreement in that decreased latencies in responding were found for nouns compared to adjectives. Finally, in a second experiment, Glanzer (1962) found that although equal numbers of

associations were given to noun and adjective stimuli, fewer different but more common associations were given to nouns in a limited time period. Again the findings in this study concur with Glanzer's in that 280 common associations were given to sex words (nouns) but only 147 were given to hostile words (adjectives), a difference which was significant well beyond the .001 level (X^2 40.48 df 1).

In sum, since hostile words (adjectives) showed greater latencies and elicited a greater number of different and unusual responses than sex words (nouns), this would strongly suggest that the hostile stimuli and associations were sufficiently difficult as to supercede any effects of punishment and preclude discriminations among these S-R pairs. The difficulty hypothesis received still further encouragement from the statements, although admittedly subjective, made by the subjects at the end of the experiment. A large majority of subjects stated that it was difficult to give associations to the adjective (hostile) words because they were so much alike. Although the difficulty hypothesis is partially supported by these findings, future research using varying degrees of difficulty of hostile words is needed.

Next, consideration will be given to the two personality measures used, namely, the I-E and rating scales. Of eleven response measures used in assessing differences between the internally and externally controlled subjects, only three were significant. This modest number would suggest that the differentiation of subjects based on the I-E scale was not being adequately estimated by the response measures used. In line with this, it was found that students responding to the scale early in the semester produced a more normal distribution,

whereas later in the semester the distribution included a preponderance of high scores (externally controlled). A finding of this kind would suggest that the scale is sensitive to situational effects on personality. Hence, it is probable that the response measures used in this research were not appropriate to what the scale was estimating since the response measures were not found to reflect the effects of different portions, i.e., early versus late, of the semester. Additional difficulties in using the I-E scale were found when a test-retest reliability was conducted with 70 students over a two-week period. The product moment correlation of +.48 indicated that the scale was only moderately reliable. In view of the foregoing, future research will need either to improve the reliability of the scale or to construct a new scale to assess expectancies for negative reinforcement in order to determine more efficiently whether a relation exists between this personality dimension and sequence of punishment.

The second personality measure was the rating scale. The most important finding here is that sex words, both shocked and non-shocked, were re-rated for the most part toward the unpleasant end of the continuum of the rating scale, whereas hostile words, both shocked and non-shocked, were re-rated toward the pleasant end of the continuum. It is possible that the sex finding was reflecting general avoidance toward the situation consistent with the findings of Caron and Wallach (1957). A re-rating of this nature is also possible for sex words, however, because the initial rating indicated a tendency for the sex words to be clustered in the neutral rating position. Hence, on re-rate, general avoidance to the situation can be expressed by a movement of the words toward the unpleasant end of the continuum.

On the other hand, the hostile words in the initial rating were clustered around the unpleasant rating positions. Here a change on re-rate can be a result of at least two events. First, more pleasant ratings may simply be reflecting random variation, or they may have occurred because there is more room for re-rating to move toward the pleasant end of the continuum. In view of the fact that words in the sex and hostile groupings were initially rated very differently, future research should select words that are more equivalently rated so that directional changes may be more adequately compared.

It is worth noting that factor C (shock early versus shock late) did not produce a significant error difference in learning the associations. This non-significant finding seems unusual since it is reasonable to assume that when a subject is in a threatening situation for some time, adaptation would take place and, therefore, later shock would produce less of an effect. Conversely, it is possible to reason that shock given early combines with the initial threat of the situation, thus producing a greater cumulative effect. The failure of these expectations to materialize during a short-term separation between the administration of sequences of punishment suggests that it would be worthwhile to examine the effects of longer intervals, e.g., days between the occurrence of sequential punishments.

Finally, attention should be called to the finding of a significant error difference in learning associations between those receiving high and low intensities of shock, whereas no difference was found based on the number of punishments received. A possible factor here is that intensity was obtained as a subjective commitment on the part of subjects, whereas the number of punishments was not. It

is conceivable that if the individuals had also been asked about the number of punishments that they would find acceptable or unacceptable, a similar difference to that found with intensity might be present. Future work might well explore this possibility.

Suggestions for Research

Apart from the considerations above, several additional problems remain for future research. First, an examination of the dimension of the general difficulty of material in relation to sequential punishment might be considered. A second line of investigation may be in relation to the subjective commitments people make in regard to avoidant situations and the effect of sequential administration of punishment in those situations. Thirdly, the question of whether avoidance is reduced through learning (repression removal) is suggested by our re-rating results and our finding that subjects could not identify (i.e., were not "aware") what was and was not punished. This could be examined more extensively by obtaining assessments at varying points following the experience of sequential punishment. Finally, a number of methodological variables might be examined. Thus the time interval between the induction of repression and removal through learning of the associations could be varied over days, weeks, or months, the effects of the list length, numbers of sequences of punishment, and the use of other forms of punishment would appear to be fruitful possiblities.

CHAPTER VI

SUMMARY AND CONCLUSIONS

The purpose of this research was to examine the effects of sequential punishments and personality factors in relation to induction of repression-suppression and generalization. A review of various conceptualizations of repression and suppression and research pertinent to them led to the development of the following questions: 1) Since clinical views have stressed the importance of sex and hostility, what is the effect of continuing sequences of punishment of equal intensity on responses related to these areas? 2) Does generalization to non-punished stimuli take place differentially according to sequentially punished behavior? 3) Do individuals who perceive reinforcements as contingent on their own behavior respond differently to those who perceive reinforcements as occurring by chance? 4) Will subjectively defined intensity of punishment produce differential effects on the availability of behavior, hence repression-suppression? 5) Are individuals able to identify or show awareness of behavior that has been sequentially punished? 6) Will the number of punishments experienced sequentially produce differential responding? 7) Do latency measures indicate differential responding to sequentially punished responses?

To investigate these questions 96 subjects, selected on the basis of a personality and rating scale, were exposed to a two-phase

experiment. In the first, subjects were individually required to give an association to each of a series of words, half were sex and half were hostile. Subjects were told that if associations were unhealthy, they would receive shock at their subjective tolerance limit. The associations given to two prearranged sequences of four words each, one in the sex words and one in the hostile, received unavoidable and intermittently administered shock. Phase II took place three days later for each subject at which time they were required to learn their associations from Phase I and again to complete the rating scale.

These were the major findings: 1) A reduction in the accessibility of punished responses was found for sex but not for hostile words. 2) Words within the synonym sequence of the punished sex words showed a gradient of generalization which was proportionate to that found between words in the punished sequences of sex words. 3) Few significant differences were found between subjects based on the I-E Scale. It was suggested that the response measures used may not have been appropriate to assess differences that the scale was measuring. 4) Although subjects accepting extreme degrees of subjective intensities of shock did differ significantly in the number of errors made in learning their associations, the effects of sequential punishment (repression-suppression) were the same for both groups. 5) Awareness of the words punished was not present. 6) The number of punishments received by subjects varied considerably but comparisons between extremes did not result in differences on a number of response measures, nor did it affect the induction of repression-suppression. 7) Several factors produced increased latencies:

hostile words, punishment, and the order of presentation of the words, i.e., hostile words preceded sex words. However, latency did not conform to any of the generalization findings.

A discussion of the results followed with suggestions for future research.

BIBLIOGRAPHY

Alexander, F. The medical value of psychoanalysis. New York: Norton and Co., 1932.

Allport, G. W., Vernon, P. E., and Lindzey, G. A study of the values: a scale for measuring the dominant interests in personality. Boston: Houghton Mifflin, 1951.

Alper, Thelma G. Memory for completed and incompleted tasks as a function of personality: an analysis of group data. J. abnorm. soc. Psychol., 1946, 41, 403-420.

Alper, Thelma G. Predicting the direction of selective recall: its relation to ego strength and n-Achievement. J. abnorm. soc. Psychol., 1957, 55, 149-165.

Belmont, L., and Birch, H. G. Re-individualizing the repression hypothesis. J. abnorm. soc. Psychol., 1951, 46, 226-235.

Bitterman, M. E., and Kniffen, C. W. Manifest anxiety and "perceptual defense." J. abnorm. soc. Psychol., 1953, 48, 248-252.

Brenner, C. The nature and development of repression in Freud's writing. Psychoanal. Stud. Child., 1957, 12, 19-46.

Bruer, J., and Freud, S. On the psychical mechanism of hysterical phenomena, 1893. Translated in Collected papers. Vol. 1, New York: Basic Books, 1959.

Bruner, J. S., and Postman, L. Emotional selectivity in perception and reaction. J. Pers., 1947, 16, 69-77.

Caron, A. J., and Wallach, M. A. Recall of interrupted tasks under stress: a phenomenon of memory or learning? J. abnorm. soc. Psychol., 1957, 55, 372-381.

Church, R. M. The varied effects of punishment on behavior. Psychol. Rev., 1963, 70, 369-398.

Cowen, E. L., and Beier, E. G. Threat expectancy, word frequencies, and perceptual prerecognition hypotheses. J. abnorm. soc. Psychol., 1954, 49, 178-182.

DeLucia, J. J., and Stanger, R. Emotional vs. frequency factors in word-recognition and association time. J. Pers., 1954, 22, 299-309.

Diven, K. Certain determinants in the conditioning of anxiety recations. J. Psychol., 1937, 3, 291-308.

Dollard, J., and Miller, N. E. Personality and psychotherapy. New York: McGraw-Hill, 1950.

Dulany, D. E. Avoidance learning of perceptual defense and vigilance. J. abnorm. soc. Psychol., 1957, 55, 333-338.

Eriksen, C. W. Defense against ego-threat in memory and perception. J. abnorm. soc. Psychol., 1952, 42, 230-235.

Freeman, J. T. Set or perceptual defense? J. exp. Psychol., 1954, 48, 283-288.

Freeman, J. T. Set versus perceptual defense; a confirmation. J. abnorm. soc. Psychol., 1955, 51, 710-712.

Freud, S. The defense neuro-psychosis, 1894. Translated in Collected papers, Vol. 1, New York: Basic Books, 1959.

Freud, S. Repression, 1915. Translated in Collected papers, Vol. 4, New York: Basic Books, 1959a.

Freud, S. The unconscious, 1915. Translated in Collected papers, Vol. 4, New York: Basic Books, 1959b.

Gilbert, G. M. The new status of experimental studies on the relationship of feeling to memory. Psychol. Bull., 1938, 35, 26-35.

Glanzer, M. Grammatical category: a rate learning and word association analysis. J. Verbal Learning Verbal Behav., 1962, 1, 37-41.

Glixman, A. F. An analysis of the use of interruption-technique in experimental studies of "repression." Psychol. Bull., 1948, 45, 491-506.

Glixman, A. F. Recall of completed and incompleted activities under varying degrees of stress. J. exp. Psychol., 1949, 39, 281-295.

Gore, M., and Rotter, J. B. A personality correlate of social action. J. Pers., 1963, 31, 58-64.

Gough, H. G. The adjective check list as a personality assessment research technique. Psychol. Repts., 1960, 6, 107-122.

Howes, D. H., and Solomon, R. L. A note of McGinnies' "Emotionality and perceptual defense." Psychol. Rev., 1950, 57, 229-234.

James, W. H., and Rotter, J. B. Partial and 100% reinforcement under chance and skill conditions. J. exp. Psychol., 1958, 55, 397-403.

Lacey, J. I., and Smith, R. L. Conditioning and generalization of unconscious anxiety. Science, 1954, 120, 1045-1052.

Lacey, O. W., Lewinger, Natalie, and Adamson, J. F. Foreknowledge as a factor affecting perceptual defense and alertness. J. exp. Psychol., 1953, 45, 169-174.

Lazarus, R. S. Is there a mechanism of perceptual defense? A reply to Postman, Bronson, and Gropper. J. abnorm. soc. Psychol., 1954, 49, 396-398.

Lazarus, R. S., and Longo, N. The consistency of psychological defenses against threat. J. abnorm. soc. Psychol., 1953, 48, 495-499.

Lewin, K. A dynamic theory of personality. New York: McGraw-Hill, 1935.

Liverant, S., and Scodel, A. Internal and external control as determinants of decision making under conditions of risk, Psychol. Repts., 1960, 7, 59-67.

McGinnies, E., and Sherman, H. Generalization of perceptual defense. J. abnorm. soc. Psychol., 1952, 47, 81-85.

Madison, P. Freud's concept of responses and defense, its theoretical and observational languages. Minneapolis: Univ. of Minnesota, 1961.

Mednick, S. A., and Freedman, J. L. Stimulus generalization. Psychol. Bull., 1960, 57, 169-200.

Meltzer, H. Present status of experimental studies on the relationship of feeling to memory. Psychol. Rev., 1930, 37, 124-129.

Murphy, G., and Solley, C. M. Learning to perceive as we wish to perceive. Bull. Menninger Clinic, 1957, 21, 225-237.

Murray, H. A. Explorations in personality. New York: Oxford Univ. Press, 1938.

Osgood, C. E. Motivation dynamics of language behavior. In M. R. Jones (Ed.) Nebraska symposium on motivation. Lincoln: Univ. of Nebraska Press, 1957, pp. 348-424.

Postman, L. On the problem of perceptual defense. Psychol. Rev. 1953, 60, 299-306.

Postman, L., Bruner, J. S., and McGinnies, E. Personal values as selective factors in perception. J. abnorm. soc. Psychol., 1948, 43, 142-155.

Postman, L., Bronson, Wanda C., and Gropper, G. L. Is there a mechanism of perceptual defense? J. abnorm. soc. Psychol., 1953, 48, 215-224.

Postman, L., and Schneider, B. H. Personal values, visual recognition, and recall. Psychol. Rev., 1951, 58, 271-284.

Razran, G. H. S. A quantitative study of meaning by a conditioned salivary technique (semantic conditioning). Science, 1939, 90, 89-90.

Reece, M. M. The effect of shock on recognition thresholds. J. abnorm. soc. Psychol., 1954, 49, 165-172.

Riess, B. F. Semantic conditioning involving the galvanic skin reflex. J. exp. Psychol., 1940, 26, 239-240.

Rosenzweig, S. An experimental study of "repression" with special reference to need-persistive and ego-defensive reactions to frustration. J. exp. Psychol., 1943, 32, 64-74.

Rosenzweig, S., and Mason, Gwendolyn. An experimental study of memory in relation to the theory of repression. Brit. J. Psychol., 1934, 24, 247-265.

Rotter, J. B., Seeman, M. R., and Liverant, S. Internal versus external control of reinforcement: a major variable in behavior theory. In N. F. Washburne (Ed.), Decisions, values and groups, Vol. 2, New York: Pergamon Press, 1962.

Sears, R. R. Survey of objective studies of psychoanalytical concepts. Soc. Sci. Coun. Bull., 1943, no. 51.

Sears, R. R. Personality. Ann. Rev. Psychol., 1950, 1, 105-118.

Seeman, M., and Evans, J. W. Alienation and learning in a hostile setting. Amer. Sociological Rev., 1962, 27, 772-783.

Solomon, R. L., and Howes, D. H. Word frequency, personal values, and visual duration thresholds. Psychol. Rev., 1951, 58, 256-270.

Solomon, R. L., and Postman, L. Frequency of usage as a determinant of recognition thresholds for words. J. exp. Psychol., 1952, 43, 195-201.

Thorndike, E. L., and Lorge, I. The teacher's book of 30,000 words. New York: Columbia Univ. Press, 1944.

Wiener, M. Word-frequency or motivation in perceptual defense? J. abnorm. soc. Psychol., 1955, 51, 214-218.

Worell, L. The ring of punishment: a theoretical and experimental analogue of repression and suppression. J. abnorm. Psychol., (in press).

Wylie, R. C. Generalization of semantic conditioning of the galvanic skin response. Unpublished M.A. thesis, University of Pittsburg, 1940.

Zeigarnick, Bluma. Über das Behalten von erledigten und unerledigten Handlungen. Psychol. Forsch., 1927, 9, 1-85.

Zeller, A. F. An experimental analogue of repression: I. Historical summary. Psychol. Bull., 1950, 47, 39-51.

APPENDIX A

SOCIAL REACTION INVENTORY

This is a questionnaire to find out the way in which certain important events in our society affect different people. Each item consists of a pair of alternatives lettered a or b. Please select the one statement of each pair (and only one) which you more strongly believe to be the case as far as you're concerned. Be sure to select the one you actually believe to be more true rather than the one you think you should choose or the one you would like to be true. This is a measure of personal belief: obviously there are no right or wrong answers.

Your answers to the items on this inventory are to be recorded on a separate answer sheet which is loosely inserted in the booklet. Remove THIS ANSWER SHEET NOW. Print your name and any other information requested by the examiner on the answer sheet, then finish reading these directions. Do not open the booklet until you are told to do so.

Please answer these items carefully but do not spend too much time on any one item. Be sure to find an answer for every choice. Find the number of the item on the answer sheet and black-in the space under the number 1 or 2 which you choose as the statement most true.

In some instances you may discover that you believe both statements or neither one. In such cases, be sure to select the one you more strongly believe to be the case as far as you're concerned. Also try to respond to each item independently when making your choice; do not be influenced by your previous choices.

REMEMBER

Select that alternative which you personally believe to be more true.

I more strongly believe that:

1. a. Children get into trouble because their parents punish them too much.

   b. The trouble with most children nowadays is that their parents are too easy with them.

2. a. Many of the unhappy things in people's lives are partly due to bad luck.

   b. People's misfortunes result from the mistakes they make.

3 a. One of the major reasons why we have wars is because people don't take enough interest in politics.

   b. There will always be wars, no matter how hard people try to prevent them.

4. a. In the long run people get the respect they deserve in this world.

   b. Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries.

5. a. The idea that teachers are unfair to students is nonsense.

   b. Most students don't realize the extent to which their grades are influenced by accidental happenings.

6. a. Without the right breaks one cannot be an effective leader.

   b. Capable people who fail to become leaders have not taken advantage of their opportunities.

7. a. No matter how hard you try some people just don't like you.

   b. People who can't get others to like them, don't understand how to get along with others.

8. a. Heredity plays the major role in determining one's personality.

   b. It is one's experiences in life which determine what they're like.

9. a. I have often found that what is going to happen will happen.

   b. Trusting to fate has never turned out as well for me as making a decision to take a definite course of action.

I more strongly believe that:

10. a. In the case of the well prepared student there is rarely if ever such a thing as an unfair test.

    b. Many times exam questions tend to be so unrelated to course work, that studying is really useless.

11. a. Becoming a success is a matter of hard work, luck has little or nothing to do with it.

    b. Getting a good job depends mainly on being in the right place at the right time.

12. a. The average citizen can have an influence in government decisions.

    b. This world is run by the few people in power, and there is not much the little guy can do about it.

13. a. When I make plans, I am almost certain that I can make them work.

    b. It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyhow.

14. a. There are certain people who are just no good.

    b. There is some good in everybody.

15. a. In my case getting what I want has little or nothing to do with luck.

    b. Many times we might just as well decide what to do by flipping a coin.

16. a. Who gets to be the boss often depends on who was lucky enough to be in the right place first.

    b. Getting people to do the right thing depends upon ability, luck has little or nothing to do with it.

17. a. As far as world affairs are concerned, most of us are the victims of forces we can neither understand, nor control.

    b. By taking an active part in political and social affairs the people can control world events.

I more strongly believe that:

18. a. Most people don't realize the extent to which their lives are controlled by accidental happenings.

    b. There really is no such thing as "luck."

19. a. One should always be willing to admit his mistakes.

    b. It is usually best to cover up one's mistakes.

20. a. It is hard to know whether or not a person really likes you.

    b. How many friends you have depends upon how nice a person you are.

21. a. In the long run the bad things that happen to us are balanced by the good ones.

    b. Most misfortunes are the result of lack of ability, ignorance, laziness, or all three.

22. a. With enough effort we can wipe out political corruption.

    b. It is difficult for people to have much control over the things politicians do in office.

23. a. Sometimes I can't understand how teachers arrive at the grades they give.

    b. There is a direct connection between how hard I study and the grades I get.

24. a. A good leader expects people to decide for themselves what they should do.

    b. A good leader makes it clear to everybody what their jobs are.

25. a. Many times I feel that I have little influence over the things that happen to me.

    b. It is impossible for me to believe that chance or luck plays an important role in my life.

26. a. People are lonely because they don't try to be friendly.

    b. There's not much use in trying too hard to please people, if they like you, they like you.

I more strongly believe that:

27. a. There is too much emphasis on athletics in high school.

    b. Team sports are an excellent way to build character.

28. a. What happens to me is my own doing.

    b. Sometimes I feel that I don't have enough control over the direction my life is taking.

29. a. Most of the time I can't understand why politicians behave the way they do.

    b. In the long run the people are responsible for bad government on a national as well as on a local level.

APPENDIX B

INSTRUCTIONS

Words oftentimes have more meaning to each of us than the definition given by the dictionary. They may remind us of many pleasant or unpleansant experiences.

The following lists of words are presented in three categories: achievement, sex, and hostile. You are asked to rate each word on a scale ranging from pleasant through neutral to unpleasant. If the word has an unpleasant meaning associated with it, write the word in the space from 1 through 6 located on the lower half of the rating sheet; if the word has a pleasant meaning write it in the space from 1 through 6 located on the upper half of the rating sheet. Should the word have a neutral meaning, place it in the space marked neutral.

For example, take the word punctual. If this word has a strongly pleasant meaning to you, it would be written under the heading strongly pleasant; if moderate, under the heading moderately pleasant; if slight, under the heading slightly pleasant. If this word has an unpleasant meaning, it would be written under the heading slightly, moderately, or strongly unpleasant, depending again upon the strength of the unpleasantness of the word. If this word has a neutral meaning, place it in the neutral category. Words for which you don't know the meaning should be placed in the neutral category followed by a question mark.

Be certain to note the three headings on the rating sheet printed along the top. These are achievement, sex and hostile. Be sure to place the words from the word list under their appropriate heading on the rating sheet.

WORD LIST

Achievement	Sex	Hostile
Thorough	Orgy	Excitable
Resourceful	Abortion	Cruel
Efficient	Excretion	Unkind
Capable	Raped	Aggravation
Initiative	Chastity	Rude
Persevering	Virgin	Brutal
Active	Amorous	Impolite
Energetic	Ejaculation	Vindictive
Conscientious	Belly	Arrogant
Opportunistic	Orgasm	Defensive
Planful	Incest	Resentful
Confident	Erection	Bitter
Persistent	Breast	Irritable
Ambitious	Douche	Destructive
Forceful	Concubine	Cynical
Alert	Intimacy	Assertive
Dominant	Bed	Rebellious
Intelligent	Adultery	Dominant
Enterprising	Bitch	Intolerant
Aggressive	Intercourse	Aggressive
Determined	Erotic	Impatient
Enthusiastic	Brassiere	Blustery
Industrious	Filth	Forceful
Assertive	Condom	Dissatisfied
Independent	Circumcision	Autocratic

		ACHIEVEMENT	SEX	HOSTILE
PLEASANT	6.			
	5.			
		STRONGLY PLEASANT		
	4.			
	3.			
		MODERATELY PLEASANT		
	2.			
	1.			
		SLIGHTLY PLEASANT		
NEUTRAL	0			
		SLIGHTLY UNPLEASANT		
UNPLEASANT	1.			
	2.			
		MODERATELY UNPLEASANT		
	3.			
	4.			
		STRONGLY UNPLEASANT		
	5.			
	6.			

VITA

Norman Dale Smith

Candidate for the Degree of

Doctor of Philosophy

Thesis: THE EFFECTS OF SEQUENTIAL PUNISHMENTS AND PERSONALITY UPON THE DEVELOPMENT OF REPRESSION-SUPPRESSION AND ITS GENERALIZATION

Major Field: Psychology

Biographical:

Personal Data: Born in Enid, Oklahoma, August 26, 1929, the son of Eli H. and Olive Folger Smith.

Education: Attended Hilder Military Preparatory School, Washington, D.C.; Congressional Appointment to The United States Military Academy, West Point, 1948; received the Bachelor of Arts degree from Phillips University, with a major in Psychology in May, 1958; attended the University of Wichita, 1958 to 1959; completed the requirements for the Doctor of Philosophy degree, Oklahoma State University in August, 1964.

Professional Experience: Commissioned a Second Lieutenant with the United States Army; served as an artillery officer in Korea, 1950 to 1951; was a Graduate Fellow from 1958 to 1959 at the University of Wichita; has been a Graduate Teaching Assistant from 1961 to 1964 at the Oklahoma State University.